Savannah River Maritime Commission

In Re: Application of the U.S. Army Corps of Engineers, Savannah District, For Certification and Permitting of the Savannah Harbor Expansion Project.

Notice of Proposed Decision

The U.S. Army Corps of Engineers, Savannah District (Savannah Corps), proposes to undertake a civil works project to deepen the federal navigation channel in the Savannah Harbor and up the Savannah River. Specifically, the Savannah Corps evaluated alternative project depths of -44, -45, -46, -47, and -48 feet mean low water (MLW),[1] as well as a "no action" alternative, selecting a "preferred" depth of -47 feet MLW within the inner harbor navigation channel (Stations 000+000 to 103+000) (Inner Harbor) and a slightly deeper channel in the entrance channel and outer harbor of -49 feet MLW (Stations 000+000 to -97+680) (Outer Harbor). Savannah Corps, Final Environmental Impact Statement (Final EIS) at 3-17. The project is colloquially known as the Savannah Harbor Expansion Project (SHEP).

This matter is before the Savannah River Maritime Commission (Commission) pursuant to its statutory authority under S.C. Code Ann. § 54-6-10, which established the Commission to represent the State of South Carolina "in all matters pertaining to the navigability, depth, dredging, wastewater and sludge disposal, and related collateral issues in regard to the use of the Savannah River as a waterway for ocean-going container or commerce vessels." Moreover, the Commission is

[1] The Savannah Corps utilizes two different measurements in the draft and final environmental impact statements and general re-evaluation reports. The Savannah Corps uses mean low water (MLW) and mean lower low water (MLLW) interchangeably, although MLLW would be slightly deeper than MLW. Because the Savannah Corps uses MLW in its environmental impact statements as the level of analysis conducted for the environmental impacts and description of the project, the Commission will similarly utilize MLW as the operative unit of measurement.

"empowered to negotiate on behalf of the State of South Carolina and enter into agreements with the State of Georgia [and] U.S. Army Corps of Engineers." Id. Further, the Commission's responsibilities "supersede any other concurrent responsibilities of a particular state agency or department." Id.

The Savannah Corps has applied for authorization from the State of South Carolina to proceed with the SHEP. This notice of proposed decision constitutes the Commission's decision related to the Savannah Corps' request for South Carolina's authorization related to the SHEP, which shall become final and binding in 15 days unless challenged at the South Carolina Administrative Law Court by the Savannah Corps or an affected person.

Background and Facts

The purpose of the SHEP is to deepen the harbor from its present controlling depth of -42 feet MLW along the federal navigation channel in Savannah Harbor and up the Savannah River. The stated need and purpose is to improve navigation efficiency and safety; avoid, minimize, or compensate for adverse environmental impacts associated with the project; and provide adequate dredge material disposal capacity for 50 years. Savannah Corps, Final EIS at 2-5. The stated purpose is, in short, to increase transportation efficiency, not to accommodate or provide for an increase in cargo volumes at the Georgia Ports Authority (GPA) terminals located within the project area. Savannah Corps, Final General Re-evaluation Report (Final GRR) Appx. A at 30 ("Under future project conditions, the same volume of cargo is assumed to move through Savannah Harbor, however, a deepening project will allow shippers to load their vessels more efficiently or take advantage of larger vessels. This is the main driver of the [National Economic Development] benefits."); see GPA Resp. to Requests for Admission at 5, dated April 3, 2012 (Savannah Riverkeeper v. S.C. Dep't of Health and Envtl. Control, Docket No. 11-ALJ-07-0618-CC (ALC)) ("GPA admits that the throughput capacity of the Garden City terminal is determined by its landside

facilities and ship berths and not the depth of the Savannah River navigation channel."); but see Mary Carr Mayle and Mary Landers, *Corps, GPA: Deepen River to 47 feet*, Savannah Morning News (April 13, 2012) (quoting GPA's Curtis Foltz as stating: "I would submit to you that without deepening the jobs and costs of shipping goods to this region are at risk" and claiming GPA would lose business to other ports without the SHEP); Savannah Corps, Draft EIS Appx. L at 34 ("Harbor deepening would increase the amount of goods brought into the port."). This 'transportation efficiency" thus derives from vessels, but, notably, neither the Savannah Corps nor the Georgia Ports Authority has (thus far) claimed to try and accommodate most Post-Panamax[2] vessels, but instead the Savannah Corps and Georgia Ports Authority are targeting the 6,000-8,200 TEU[3] classes of ships for commerce in Savannah.

In its 1998 initial Tier I EIS with regard to the SHEP, the GPA and Savannah Corps studied a depth for the SHEP of -50 feet MLW. GPA and Savannah Corps, Tier I Environmental Impact Statement (1998). Nonetheless, the Chief's Report noted that the study depth of -50 feet MLW by the Savannah Corps was clearly not authorized. U.S. Army Corps of Eng'rs, Final Report of the Chief of Eng'rs at 2, 4 (Oct. 11, 1999). The Savannah Corps continued its analysis. Unfortunately, the Savannah Corps initially proposed a channel design that would not serve its purpose. The Savannah Corps proposed to deepen the outer harbor to the end of the entrance channel to a depth of 50 feet, which would terminate in the ocean surrounded by a depth of only about 45 feet. In other words, the Savannah Corps' proposed design would have been an exercise in futility and

[2] A "Panamax" vessel is the largest size that the Panama Canal can accommodate, and a "Post-Panamax" vessel is larger than the current Panama Canal dimensions. However, many of these vessels will be able to traverse the Panama Canal upon completion of the Panama Canal expansion project. The Corps of Engineers categorizes Post-Panamax vessels into three generations and four classes based on approximate capacity: Generation 1, Class K; Generation 2, Classes S and G; and Generation 3, Class E. U.S. Army Corps of Eng'rs, The Implications of Panama Canal Expansion to U.S. Ports and Coastal Navigation Economic Analysis at 6 (Dec. 2008).

[3] A TEU is a twenty-foot equivalent unit, a common unit used to describe containers.

resulted in the unnecessary expenditure of hundreds of millions of dollars. It was not until a consultant *for this Commission* pointed out to the Savannah Corps in 2009, some ten years after Congressional authorization and study, that the proposed design would terminate in the ocean at a shallower depth and negate the viability or usefulness of the then-proposed -47/-48 foot MLW controlling depth of the SHEP that the Savannah Corps realized the deficiency of its design. Savannah Corps, Final GRR Appx. D at 27; see U.S. Dep't of Commerce, Savannah River Approach, Nautical Chart 11505. This realization resulted in the Savannah Corps' proposal of an approximately 7.3 mile extension of the ocean channel deepening resulting in the addition of millions of dollars in additional costs and approximately 4 million extra cubic yards of dredge material for the SHEP. Savannah Corps, Final EIS at 3-4.

The Savannah Corps and the GPA conducted a number of studies and reports from 1999 through issuance of the draft environmental impact statement (Draft EIS) and draft general re-evaluation report (Draft GRR) released in November 2010. The Savannah Corps identified a tentative preferred alternative of -47 feet MLW for the Inner Harbor and -50 feet MLW for the Outer Harbor.[4] Savannah Corps, Draft EIS at 3-17. On November 15, 2010, the Corps filed an application for a Clean Water Act Section 401 Water Quality Certification (401 Certification)[5], Construction in Navigable Waters Permit (Navigable Waters Permit),[6] and a Coastal Zone Consistency Determination (CZCD). The Savannah Corps received a number of adverse comments. On or about January 25 and 31, 2011, the South Carolina Department of Health &

[4] The GPA proposed a channel depth of -48 feet MLW.

[5] Savannah Corps, Draft EIS at 6-1 ("Channel deepening would require a Section 401 Water Quality Certificate from ... South Carolina DHEC.").

[6] The submission of the request for the 401 Certification simultaneously serves as the request for a Navigable Waters Permit, and no separate application is required. See S.C. Code Ann. Regs. 19-450.D.1. This is because the criteria for the Navigable Waters Permit and its subsequent terms and conditions are enforceable components of and a part of the 401 Certification.

Environmental Control's (DHEC) Office of Ocean and Coastal Resource Management (OCRM) issued letters determining that the SHEP was inconsistent with the South Carolina Coastal Zone Management Program (CZMP), thus denying the CZCD. On or about January 21 and 25, the Commission also commented by letters opposing the SHEP, and the South Carolina Department of Natural Resources (DNR) similarly commented by letter dated January 25, 2011.

Discussions between DHEC and the Savannah Corps continued, with DHEC continuing to express reservations about the SHEP in general and the lack adequate mitigation in particular. On September 30, 2011, DHEC issued a notice of proposed decision denying the 401 Certification and Navigable Waters Permit (NOPD)[7] and OCRM sent another letter "standing by" its prior finding of inconsistency. The September 30, 2011 staff decision by DHEC recommended denial of the 401 Certification and the Navigable Waters Permit and specifically referenced the comments from the Commission. DHEC, Staff Assessment at 3, 7 (Sept. 30, 2010) (referencing the need for a Navigable Waters Permit, recommending denial based on the Navigable Waters Permit criteria, and noting that the Commission objected to the SHEP). The Savannah Corps and GPA discounted South Carolina's environmental concerns, and the GPA's Executive Director called the denial a "nuisance" and "unnecessary distraction." Russ Bynum, *Corps warns it may ignore S.C. to deepen Savannah Harbor*, The State (Oct. 18, 2011) (discussing the Savannah Corps' threat to proceed without South Carolina, and quoting GPA's Curtis Foltz calling the DHEC denial a "nuisance" and "unnecessary distraction").

By separate letters dated October 7, 2011, the Savannah Corps and the GPA filed requests for final review with the DHEC Board of the 401 Certification and CZCD. The DHEC Board

[7] See Construction in Navigable Waters Permit Document Mailing, dated Sept. 30, 2011 (reflecting that the Savannah Corps' application was treated as a Navigable Waters Permit application, with the Savannah Corps named as the applicant).

agreed to conduct a final review conference, scheduled for November 10, 2011. In the late afternoon of November 9, the Savannah Corps and the GPA approached the DHEC staff with a proposal for a final resolution to the outstanding issues. At the November 10, 2011 DHEC Board meeting, DHEC staff presented a proposed resolution to the Board. Despite the subject matter, the Commission was not allowed to participate even though it previously had contacted the DHEC Board offering to participate in the proceeding. See E-mail of Amsler to Moss, dated Nov. 8, 2011 (declining to allow the Commission to participate in the final review conference).

Nonetheless, DHEC staff relied upon representations from the GPA to supposedly ensure mitigation conditions required to be implemented by the Savannah Corps—the applicant—would be satisfied. The DHEC Board adopted and approved the proposal, granting the 401 Certification (and ostensibly the Navigable Waters Permit) for the SHEP and certifying the SHEP as consistent with the CZMP, as reflected in the DHEC Board's five-page Final Agency Decision dated November 15, 2011[8] and the accompanying 401 Certification/Navigable Waters Permit and OCRM CZCD (DHEC Decision). Cf. Islander East Pipeline Co., LLC v. Connecticut Dep't of Envtl. Protection, 467 F.3d 295, 320 (2d Cir. 2006) (a five-page decision by the environmental agency was insufficient due to its brevity and lack of analysis). The Savannah Corps and GPA were signatories to the DHEC Decision.

Importantly, at the DHEC Board meeting on November 10, DHEC staff left the impression that the terms agreed upon would be enforceable. The DHEC representative told the DHEC Board that the Savannah Corps "is going to have a lot of work to do[] to comply with this. A lot of conditions and terms and their record of decision [sic]." Transc. DHEC Bd. Mtg. at 25:22-24 (Nov.

[8] The Savannah Corps previously acknowledged and agreed that the time period for DHEC to render a decision on the 401 Certification expired on November 15, 2011. Ltr. of Hall to Hightower, dated Jan. 13, 2011 (acknowledging and consenting to the one-year period for a decision from South Carolina until November 2011).

10, 2011). However, the accuracy of this statement is questionable. The Savannah Corps actually made no concessions to DHEC. Any concession was made by GPA to DHEC without the involvement of the Commission, which is a violation of the Commission's designation as the proper entity to represent the State's interests in negotiations with Georgia's representatives regarding the SHEP. Between the November 10 Board meeting and the November 15 DHEC Decision, GPA and the Savannah Corps participated in drafting the DHEC Decision and ensured in their revisions of the draft that certain obligations may NOT be included in the record of decision, were not enforceable, and the Savannah Corps further attempted to retain language to nullify and ignore the 401 Certification at a later date. E-mail of Klein to Harleston, dated Nov. 14, 2011 (Savannah Corps making changes to the draft DHEC Decision document, including making changes that "relate to [the Savannah Corps'] issue about not making the additional 'measures' 'part of the project'" and changing language to "preserve" the Savannah Corps' future attempt to invoke an exemption to exclude itself from the terms of the 401 Certification); E-mail of Richardson to Harleston, dated Nov. 12, 2011 (GPA making changes to the draft DHEC Decision document); E-mail of Raider to Harleston, dated Nov. 11, 2011 (GPA making changes to the draft DHEC Decision document). In other words, even the five-page DHEC Decision was not really DHEC's own decision, but one crafted by the Savannah Corps and GPA to meet their needs and desires.

The DHEC Decision, which wrongfully relied upon statements made by the GPA and erroneously claimed the SHEP satisfied the Navigable Waters Permitting criteria, was challenged by the Commission before the South Carolina Administrative Law Court through the Commission's Request for Contested Case filed December 12, 2011 (which was consolidated with other challenges and docketed as Savannah Riverkeeper v. DHEC, Docket No. 11-ALJ-07-0618-CC), and that matter remains pending.

Jurisdiction

The SHEP involves the dredging, filling, and construction or alteration activity in, on, and over a navigable water and the bed under navigable waters and also lands or waters subject to a public navigational servitude under Article 14, Section 4 of the South Carolina Constitution and S.C. Code Ann. § 49-1-10 (including submerged lands under the navigable waters of the State) and is an activity significantly affecting the flow of any navigable water. As a result, the SHEP will adversely impact the water quality and environment of South Carolina.[9] The SHEP requires a Section 401 of the Clean Water certification from the State of South Carolina (the 401 Certification) under 33 U.S.C.A. § 1341, S.C. Code Ann. Regs. 61-101, and also must satisfy the Navigable Waters Permit criteria under S.C. Code Ann. Regs. 19-450 from the State of South Carolina. See Savannah Riverkeeper v. DHEC, Docket No. 11-ALJ-07-0618-CC, Am. Prehearing Statement of the Savannah Corps at 31, dated March 19, 2012 ("No separate Construction in Navigable Waters Permit is required, as this process is part of the Section 401 Water Quality Certification."); Ltr. of Foltz to Hightower, dated Jan. 14, 2011 (referencing Regulation 19-450 as part of the project analysis by DHEC). Because the SHEP's adverse impacts occur in the coastal zone, the SHEP also requires a CZCD for the CZMP. All of these requirements under the 401 Certification (including the Navigable Waters Permit criteria) and CZCD are premised and founded upon protecting the environment of the State of South Carolina and imposing reasonable terms and conditions to protect water quality, natural resources, fish and wildlife species, populations, and habitats, and limit pollution to acceptable levels.

[9] Dredging constitutes a discharge under the Clean Water Act triggering DHEC's and the Commission's respective jurisdiction. See S.D. Warren Co. v. Maine Bd. of Envtl. Protection, 547 U.S. 370, 376 (2006); AES Sparrow Point LNG v. Wilson, 589 F.3d 721, 731 (4th Cir. 2009) (dredging constitutes pollutant discharge through lowering of dissolved oxygen levels); Alabama Rivers Alliance v. Federal Energy Regulatory Comm'n, 325 F.3d 290, 293 (D.C. Cir. 2003)

Generally, DHEC is the state agency charged with issuing a Navigable Waters Permit. When a Navigable Waters Permit and a 401 Certification are both necessary for the same activity, DHEC typically will issue a 401 Certification which constitutes the issuance of the Navigable Waters Permit. See S.C. Code Ann. Regs. 19-450.3.G; 61-101.A.9 ("If an activity also requires a permit for construction in State navigable waters pursuant to applicable laws and regulations, the review for the water quality certification will consider issues of that permit and the Department will not issue a separate permit for construction in State navigable waters. The certification will serve as the permit."). This makes sense because the requisite analysis under both is to protect water quality and the environment. Additionally, regulations applicable to Navigable Waters Permits provide that "[n]o permit is required for any activity which requires another Department permit or certification, including but not limited to 401 Water Quality Certifications.... **These permitting/certification areas will be required to coordinate with the Construction in Navigable Waters Permitting staff to insure the provisions of this regulation are adhered to.**" S.C. Code Ann. Regs. 19-450.3.G (emphasis added). Accordingly, the 401 Certification is required to ensure consideration of the issues pertaining to the Navigable Waters Permit and inclusion of its requisite terms and conditions within the 401 Certification. Id.; see Savannah Riverkeeper v. DHEC, Docket No. 11-ALJ-07-0618-CC, Am. Prehearing Statement of the Savannah Corps at 31, dated March 19, 2012 ("No separate Construction in Navigable Waters Permit is required, as this process is part of the Section 401 Water Quality Certification."); Ltr. of Foltz to Hightower, dated Jan. 14, 2011 (referencing Regulation 19-450 as part of the project analysis by DHEC).

In this instance, pursuant to S.C. Code Ann. § 54-6-10, the "construction in navigable waters permitting staff" referenced in S.C. Code Ann. Regs. 19-450.3.G is the Commission. S.C. Code

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(consideration of discharges into navigable waters an appropriate component of state law considerations under 33 U.S.C.A. § 1341(d)).

Ann. § 54-6-10(A) provides in pertinent part that the Commission "is hereby established to represent the State in all matters pertaining to the navigability, depth, dredging, wastewater and sludge disposal, and related collateral issues in regard to the use of the Savannah River as a waterway for ocean-going container or commerce vessels...." Moreover, "on an interstate basis and specifically in regard to the State of Georgia, the responsibilities granted to the Savannah River Maritime Commission in this joint resolution supersede any other concurrent responsibilities of a particular state agency or department." S.C. Code Ann. § 54-6-10(F) (emphasis added). Therefore, pursuant to the plain language of the statute, the Commission acquired any and all responsibilities of the DHEC navigable waters permitting staff with regard to SHEP, and the 401 Certification staff was required to coordinate with the Commission in order to ensure that the environment is adequately protected.[10] The General Assembly affirmed this bifurcation of responsibilities between DHEC and the Commission in Act No. 125 of 2012, R. 133, H. 4627. Specifically, Act No. 125 of 2012 states in pertinent part:

> The General Assembly, pursuant to Section 7, Article I of the South Carolina Constitution, suspends the authority of the South Carolina Department of Health and Environmental Control, hereinafter the department, for all decisions subsequent to 2007 related to all matters pertaining to the navigability, depth, dredging, wastewater and sludge disposal, and related collateral issues in regard to the use of the Savannah River as a waterway for ocean-going container or commerce vessels, in particular the approval by the department of the application of the United States Army Corps of Engineers for a Construction in Navigable Waters Permit for the dredging of the South Carolina portion of the Savannah River, because the authority of the Savannah River Maritime Commission, hereinafter the Maritime Commission, superseded the responsibilities of the department for such approval, as established by Act 56 of 2007, and the approval by the department could present imminent and irreversible public health and environmental concerns for the South Carolina portion of the Savannah River.

[10] To the extent that there is any conflict between the statute and the regulations, the statute governs. McNickel's Inc. v. S.C. Dep't of Revenue, 331 S.C. 629, 503 S.E.2d 723 (1998).

Act No. 125 of 2012 § 1.

DHEC initially followed the statutory scheme. For example, the September 30, 2011 Staff Assessment and Proposed Decision by DHEC referenced the Commission's comments and recommendation to deny the applicable licenses.[11] This represented the Commission's implementation of its statutory duties as part of the consideration of the Savannah Corps' application for the requisite licenses under applicable law in conjunction with DHEC's review. Cf. 33 U.S.C.A. § 1251(b) ("It is the policy of Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution.").

Indeed, the Savannah Corps is required to comply with South Carolina law for water pollution control requirements to protect the environment of the State. See 33 U.S.C.A. §§ 1323(a) (all federal agencies "shall be subject to, and comply with, all Federal, State, interstate, and local requirements ... respecting the control and abatement of water pollution."), 1370 (Clean Water Act does not preclude a State from adopting or enforcing standards or limitations or pollution control requirements or impair any rights of the States); 33 C.F.R. § 336.1(a)(1), (b)(8) (requiring the Savannah Corps to acquire the 401 Certification); Executive Order 12088, Federal Compliance With Pollution Control Standards, dated Oct. 13, 1978 (requiring compliance of federal activities with applicable pollution control standards in the same manner as any non-federal entity); U.S. Army Corps of Eng'rs, Water Quality and Environmental Management For Corps Civil Works Projects, ER 1110-2-8154 at 1, 2 (federal activities must comply with all Federal, state, interstate, and local requirements in the same manner and extent as other entities). In fact, the Savannah Corps has characterized the 401 Certification, which by law necessarily includes the terms and conditions of a

[11] Pursuant to statute, the 401 Certification (with the Navigable Waters Permit) and CZCD are considered "licenses" under South Carolina law. S.C. Code Ann. §§ 1-23-310(4), -505(4).

Navigable Waters Permit, as an "authorization **required** from the State of South Carolina."[12] Joint Public Notice, dated Nov. 15, 2010, at 8 (emphasis added); see 33 C.F.R. § 336.1(a)(1), (b)(8) (requiring the Savannah Corps to acquire the 401 Certification).

The September 30, 2011 Staff Assessment addressed the environmental impacts, as did the Commission's January 2011 letters. However, things went awry during the DHEC Board process, resulting in the November 15, 2011 DHEC Decision which issued a 401 Certification that DHEC, the Savannah Corps, and GPA assert satisfies the Navigable Waters Permit criteria based in part on representations by a third party—GPA. Notably, the signature of the Savannah Corps on the November 15 decision document represents an acknowledgment and consent that the Savannah Corps is required to obtain a 401 Certification with terms and conditions that satisfy the Navigable Waters Permit criteria, which is an integral part of the 401 Certification analysis, albeit the Savannah

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[12] In addition to law, policy guiding the Savannah Corps' conduct also requires the Savannah Corps to obtain a 401 Certification from the State of South Carolina.

> State water quality certification requires the District Commander to accomplish the following three tasks:
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> (1) Complete and evaluation of the effects of the proposed discharge consistent with the Section 404(b)(1) Guidelines;
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> (2) Issue a public notice, with opportunity for public hearings for the proposed discharge, including or referencing the preliminary Section 404(b)(1) evaluation; and
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> (3) **Obtain certification, including any required conditions, from the State or interstate water pollution control agency that the proposed action is in compliance with established effluent limitations and water quality standards.** If the State in question has assumed responsibilities for the 404 regulatory program, a State 404 permit shall be obtained, if applicable, which will serve as the certification of compliance. District commanders shall provide the State with necessary detailed information it may need to issue the water quality certification.

U.S. Army Corps of Eng'rs, Planning and Guidance Appx. C, ER 1105-2-100 at C-42 (emphasis added).

Corps initially sought to short-circuit a critical analysis of the SHEP by the State of South Carolina.[13] But, because DHEC only had authority to issue a 401 Certification under Regulation 61-101 (but not perform the analysis under Regulation 19-450) and lacked authority to negotiate with GPA and because the Commission was denied participation in the DHEC Board review process, the 401 Certification necessarily was issued with the implied condition that it would be subject to completion of analysis and review under the Navigable Waters Permit criteria, and thus revision and modification, by the Commission. See S.C. Code Ann. § 54-6-10; Op. Att'y Gen., dated Oct. 25, 2010.[14] Thus, the terms and conditions of this decision are incorporated into the 401 Certification

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[13] The Savannah Corps sought to preordain the outcome of the environmental analysis and demanded that DHEC issue an approval within 45 days. Ltr. of Hall to Wilson, dated Nov. 4, 2010 (demanding a decision by January 2011 on the application); E-mail of Beckham to Preston and Gorman, dated Nov. 9, 2011 (noting that the Savannah Corps makes the presumption in its draft notice that DHEC will certify the SHEP within 45 days). It is an open question whether the Savannah Corps has engaged the State of South Carolina's representatives in good faith discussions or whether the Savannah Corps has simply gone through the motions with the intent of ignoring environmental impacts on South Carolina in favor of its pre-determined outcome. See, e.g., E-mail of Perry to Preston, dated May 18, 2011 ("We are increasingly concerned over the persistently arrogant and condescending approach being taken by the Savannah District....").

The Savannah Corps has maintained that it is not bound to any term, condition, or requirement that South Carolina's representatives may impose on the SHEP to protect the State's environment and natural resources. Instead, the Savannah Corps avers that it may do what it wants and need not pay any heed to South Carolina's environmental protection efforts, repeatedly threatening to invoke exemptions under the federal Clean Water Act. However, the Commission refuses to succumb to these threats. The Commission is charged with, among other things, protecting the environment of South Carolina, and it will act accordingly. The Commission hopes the Savannah Corps and the United States government respect the State of South Carolina's actions to protect its citizens and the natural resources of the State.

Further, federal law protects the State of South Carolina from such capricious behavior as ignoring the State's environmental concerns. See 33 U.S.C.A. §§ 1251(b) (It is Congressional policy to "recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution."); 33 C.F.R. § 336.1(a)(1), (b)(8) (requiring the Savannah Corps to acquire the 401 Certification). Nonetheless, setting aside the actions of the Savannah Corps, the Commission issues this decision based on the applicable environmental standards and criteria to protect the State and its environment and natural resources.

[14] Note that the 401 Certification is a decision by the State of South Carolina, and the General Assembly may delegate or bifurcate or set forth the requirements it deems appropriate for the

as a matter of law. See S.C. Code Ann. Regs. 19-450.3.G; 61-101.A.9; see also 33 U.S.C.A. § 1341(d) (water quality certification shall set forth any conditions necessary to comply with other State law).

Discussion of Findings and Conclusions

In considering and examining the Savannah Corps' application and request for authorization, the Commission reviewed documents of the Savannah Corps, including the draft and final environmental impact statements and draft and final general re-evaluation reports and other documents submitted to DHEC;[15] DHEC's file and staff analysis of the SHEP; DNR's file and staff analysis of the SHEP; and the reports and analysis of the Commission's staff and independently retained experts and consultants. See S.C. Code Ann. § 54-6-10(D). Based on the information presently available, the Commission makes the following findings, conclusions, and decision, and the terms and conditions set forth herein are made a part of the 401 Certification.[16]

(A) *Analytical Framework*

By statute, the Commission is charged with evaluating the navigability, depth, dredging, wastewater and sludge disposal, and collateral issues related to the use of the Savannah River as a waterway for ocean-going container or commerce vessels. S.C. Code Ann. § 54-6-10(A).

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consideration of water quality impacts under Section 401 of the Clean Water Act. 33 U.S.C.A. § 1341(a)(1) (requiring a certification from the "State"). This is solely a question of and matter for state law. See generally Alcoa Power Generating, Inc. v. Federal Energy Regulatory Comm'n, 643 F.3d 963 (D.C. Cir. 2011); Michael A. Rosenhouse, Construction and Application of § 401 Water Quality Certification Requirement Under Federal Clean Water Act, 33 U.S.C.A. § 1341, 17 A.L.R. Fed. 2d 309 (2011).

[15] "Information (environmental impacts, economic benefits, and costs) is provided in the EIS for all five channel depths evaluated so decision makers can have the data to decide if the benefits of a particular alternative outweigh the associated environmental impacts and costs to minimize and mitigate those impacts." Savannah Corps, Final EIS Appx. A at 488.

[16] The Commission recognizes that the proposal for design and construction of the SHEP may change prior to the issuance of a record of decision for the SHEP. The Commission reserves the right to modify, amend, or otherwise revise this decision and the terms and conditions imposed herein on the basis of a change in circumstances or conditions.

Additionally, as the permitting staff for a navigable waters permit, the Commission is responsible for assessing the total impact of the projected activity on the navigable waters and lands subject to the jurisdiction of this regulation, including the impact on the economy, environment, and natural resources of the State. The Commission is concerned with the utilization and protection of important State resources and balancing the extent and permanence of reasonably foreseeable benefits and detriments of the projected activity, including its impact on conservation, economics, aesthetics, general environmental concerns, cultural values, fish and wildlife, navigation, erosion and accretion, recreation, water quality, water supply, and conservation. The Commission also is tasked with determining whether the projected activity is consistent with the needs and welfare of the public. In particular, the Commission must consider the extent to which, among other things:

- the activity requires construction in, on, or over a navigable waterway, and the economic benefits to the State and public from construction in such location;
- the activity would impact fish and wildlife, water quality, and other natural resource values or could affect the habitats or rare and endangered species of wildlife and irreplaceable historic and archaeological sites associated with public lands and waters;
- the economic benefits to the State and public from the authorized use of lands and waters meets or exceeds the benefits from preservation of the area in its unaltered state;
- there is any adverse environmental impact which cannot be avoided by reasonable safeguards;
- all feasible alternatives are taken to avoid adverse environmental impact resulting from the project; and,
- the long-range, cumulative effects of the project, including the cumulative effects of similar projects, may affect navigable waters.

S.C. Code Ann. Regs. 19-450.9.A.

The public notice issued by the Savannah Corps and DHEC for the SHEP dated November 15, 2010, which was the trigger for the 401 Certification, Navigable Waters Permit, and CZCD evaluation, specifically identifies and acknowledges the following adverse environmental impacts associated with the SHEP:

- direct impacts to wetlands;
- indirect impacts to wetlands;
- water quality in the Savannah Harbor;
- sediment quality;
- confined disposal site effluent water quality;
- fisheries impacts;
- cultural resources;
- threatened and endangered species; and
- groundwater impacts.

Joint Public Notice, dated Nov. 15, 2010, at 4-5. Thus, by the Savannah Corps' own admission, these adverse environmental impacts are appropriate for consideration and evaluation by the Commission as part of its duties and obligations to ensure water quality and pollution control requirements are complied with in the State of South Carolina.

(B) *Environmental Impacts and Pollution Control Analysis*

The Commission is charged with the duty of evaluating environmental impacts and balancing those impacts with benefits to the State, and undertaking an analysis of appropriate pollution control requirements under the rubric established by statute and regulation. See S.C. Code Ann. § 54-6-10; S.C. Code Ann. Regs. 19-450, 61-101. As the SHEP is a water resource project, the U.S. Army Corps of Engineers has a similar duty. Specifically, federal law provides:

> Enhancement of the environment is an objective of Federal water resource programs to be considered in the planning, design, construction, and operation and maintenance of projects.... Specific considerations may include, but are not limited to, actions to preserve or enhance critical habitat for fish and wildlife; maintain or enhance water quality; improve streamflow; preservation and restoration of certain cultural resources; and the preservation or creation of wetlands.

33 C.F.R. § 236.4(b); see U.S. Army Corps of Eng'rs, Water Quality and Environmental Management For Corps Civil Works Projects, ER 1110-2-8154 at 2 (The "environment will be addressed as equal in value and importance to other project purposes when developing or carrying out management strategies. **The Corps will, at least, manage its projects in accordance with all applicable** Federal and **state environmental laws, criteria, and standards**.") (emphasis added).

In analyzing the environmental impacts from the SHEP, the Savannah Corps developed the following table which illustrates some of the potential environmental impacts of the SHEP at various project depths without mitigation.

---------- DEPTH ALTERNATIVES ----------					
	44-Foot	**45-Foot**	**46-Foot**	**47-Foot**	**48-Foot**
Salinity	Move further into estuary	Same effect, but greater amount	Same effect, but greater amount	Same effect, but greater amount	Same effect, but greater amount
Freshwater Wetlands	-551 acres	-967 acres	-1,057 acres	-1,177 acres	-1,212 acres
Brackish marsh	-7.2 acres	Same	Same	Same	Same
Dissolved Oxygen	Reductions at mid-depth and bottom	Same effect, but greater amount	Same effect, but greater amount	Same effect, But greater amount	Same effect, but greater amount
Fisheries			**Loss (-) of Acceptable Habitat**		
- Striped bass spawning	- 8.0 % (-83.0 acres)	- 12.2 % (-127.0 acres)	- 13.0 % (-135.0 acres)	-18.1 % (-188.0 acres)	- 19.7 % (-205.0 acres)
- Striped bass eggs	-9.7 % (-163.0 acres)	- 11.2 % (-188.0 acres)	- 15.9 % (-266.0 acres)	-20.5 % (-344.0 acres)	-24.5 % (-411.0 acres)
- Striped bass larvae	-13.5% (-76.0 acres)	- 18.6 % (-105.0 acres)	- 21.0 % (-119.0 acres)	-13.8 % (-78.0 acres)	- 13.8 % (-78.0 acres)
- Shortnose sturgeon adult (January)	- 0.5% (-20.0 acres)	- 0.5 % (-20.0 acres)	-0.8 % (-32.0 acres)	-0.8% (-32.0 acres)	-1.1 % (-44.0 acres)
- Shortnose sturgeon adult (August)	- 3.2 % (- 45.0 acres)	- 6.4 % (- 89.0 acres)	- 9.5 % (- 132.0 acres)	-13.3 % (-185.0 acres)	- 15.80 % (- 220.0 acres)

- Shortnose sturgeon juvenile (January)	-5.0 % (-86.0 acres)	-10.4 % (-179.0 acres)	-15.9 % (-274.0 acres)	- 19.0 % (-328.0 acres)	- 21.6 % (-373.0 acres)

Savannah Corps, Final EIS at 3-20, tbl. 3-7 (abbreviated). These adverse impacts must be addressed and mitigated. "As stewards of a significant percentage of the nation's aquatic environment, **the Corps has a responsibility to preserve, protect, and where necessary restore that portion of the environment altered by Corps projects**. The Corps is fully committed to environmentally sound project management and operation. **It is the policy of the Corps that the environment be given equal standing not simply consideration** in all aspects of project management and the operational decision-making process." U.S. Army Corps of Eng'rs, Water Quality and Environmental Management For Corps Civil Works Projects, ER 1110-2-8154 at 3 (emphasis added). To this end, the U.S. Army Corps of Engineers has adopted the following protocol for its mitigation efforts in civil works projects.

> Mitigation. Mitigation includes:
> (a) **Avoiding** the impact altogether by not taking a certain action or part of an action;
> (b) **Minimizing** impacts by limiting the degree or magnitude of the action and its implementation;
> (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
> (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
> (e) **Compensating** for the impact by replacing or providing substitute resources or environments. "Replacing" means the replacement of fish and wildlife resources in-kind. "Substitute" means the replacement of fish and wildlife resources out-of-kind. Substitute resources, on balance, shall be at least equal in value and significance as the resources lost.

U.S. Army Corps of Eng'rs, Planning and Guidance Appx. C, ER 1105-2-100 at C-5,-6 (emphasis added); see Savannah Corps, Final EIS Appx. C at 1.

The Savannah Corps has proffered a mitigation plan in an attempt to offset impacts from the SHEP. The following table reflects the adverse impacts remaining after implementation of the Savannah Corps mitigation plan.

---------- DEPTH ALTERNATIVES ----------					
	44-Foot	**45-Foot**	**46-Foot**	**47-Foot**	**48-Foot**
Salinity	Move further into estuary up Front River	Same effect, but greater amount	Same effect, but greater amount	Same effect, but greater amount	Same effect, but greater amount
Freshwater Wetlands (Conversion)	+322 acres	-32 acres	-201 acres	-223 acres	-337 acres
Brackish marsh (Conversion)	+488 acres	+861 acres	+959 acres	+964 acres	+1068 acres
Salt Marsh (Conversion)	-808 acres	-828 acres	-757 acres	-740 acres	-730 acres
Brackish Marsh (Loss)	-15.68 acres	Same	Same	Same	Same
Dissolved Oxygen	Minimal net improvement	Same	Same	Same	Same
Fisheries			**Loss (-) of Acceptable Habitat**		
- Striped bass spawning	-2.9% (-30.0 acres)	-9.2% (-96.0 acres)	-10.0% (-104.0 acres)	-13.5% (-140.0 acres)	-16.1% (-167.0 acres)
- Striped bass eggs	-9.4% (-157.0 acres)	+5.2% (+87.0 acres)	0%	-11.1% (-186.0 acres)	-10.8% (-181.0 acres)
- Striped bass larvae	-5.6% (-32.0 acres)	+1.7% (+9.0 acres)	+5.6% (+32.0 acres)	-5.0% (-28.0 acres)	-3.5% (-20.0 acres)
- Shortnose sturgeon adult (January)	-3.9% (-153.0 acres)	-4.6% (-179.0 acres)	-6.2% (-240.0 acres)	-6.9% (-266.0 acres)	-8.4% (-326.0 acres)
- Shortnose sturgeon adult (August)	+19.0% (+260.0 acres)	+9.8% (+134.0 acres)	+7.3% (+100.0 acres)	+6.5% (+89.0 acres)	+2.8% (39.0 acres)
- Shortnose sturgeon juvenile (January)	-6.7% (-220.0 acres)	-7.0% (-231.0 acres)	-7.3% (-238.0 acres)	-7.6% (-251.0 acres)	-11.5% (-376.0 acres)

Savannah Corps, Final EIS at 3-21 tbl. 3-8 (abbreviated).

With these guiding principles and environmental impacts in mind, the Commission turns to an analysis of the pertinent environmental considerations and aspects of the SHEP.

(1) Wetlands Impacts

The Commission has evaluated the wetlands impacts of the different alternatives and concludes that the -45 foot MLW is the preferable alternative in balancing the environmental harm with the benefits of the project. The Savannah Corps utilized the Standard Operating Procedure (SOP) to analyze the impacts to wetlands. However, the SOP is generally applied to projects less than 10 acres, and its application to SHEP is unusual and extraordinary. Ltr. of Bailey to Beckham, dated Aug. 1, 2011 (acknowledging that the use of the SOP for the SHEP "differs from a normal Regulatory application").

The Savannah Corps identified the potential impacts to saltwater, brackish, and freshwater wetlands resulting from the SHEP. See, e.g., Savannah Corps, Final EIS at 5-12. The Savannah Corps evaluated flow rerouting as a means to minimizing the impacts, and adopted what it references as Flow Plan 6A, which is the flow rerouting plan for all the deepening alternatives except for the -44 foot MLW alternative. Savannah Corps, Final EIS at 5-27.

The Savannah Corps also proposed a wetlands mitigation plan in the Draft EIS that was highly criticized because it sought to take credit for adverse impacts through the conversion of wetlands from one type to another as a result of the SHEP. E-mail of Beckham to McIntosh, dated June 16, 2011 (criticizing the Savannah Corps' choice of values for wetlands mitigation); DHEC, Summary of Issues and Staff Position at 5 (Oct. 31, 2011) (criticizing the Savannah Corps' wetlands mitigation analysis). Ignoring this criticism, the Savannah Corps adopts the untenable position in the Final EIS that adverse impacts may also serve as credits towards mitigation.

In the analytical matrix for assigning wetlands values, the Savannah Corps significantly underestimated the impacts and overestimated the mitigation activities. Even the U.S. Environmental Protection Agency noted that the proposed mitigation ratios offered by the Savannah Corps did not meet recommended levels. Ltr. of Fleming to Hall, dated Jan. 28, 2011

Enc. at 5 (wetlands mitigation ratios below EPA recommended levels). The Draft EIS failed to include a functional assessment of wetlands impacts, which is a critical component of wetlands mitigation valuation. Ltr. of Fleming to Hall, dated Jan. 28, 2011 Enc. at 6 ("The DEIS and its supporting studies did not employ a functional assessment to objectively and quantitatively evaluate the functional losses due to excavation of wetlands and conversions of wetlands types from the SHEP."). The Final EIS fares little better, providing a minimal functional assessment of the wetlands impacts. As a result, the Savannah Corps has failed to offer a mitigation plan that properly mitigates for the adverse impacts to wetlands. DHEC, Staff Assessment at 9 (Sept. 30, 2010) ("The plan does not adequately compensate for all of the wetland impacts, nor does the plan meet the requirements of [Regulation] 61-101. Lack of appropriate mitigation means that functions within the ecosystem will be eliminated or impaired by the proposed activity."). DHEC also recognized that the Savannah Corps' mitigation calculation was deficient, requesting an additional 2,200 credits (approximately 1,690 acres) for the wetlands impact. DHEC Decision at 4.

The GPA, on the Savannah Corps' behalf, proposed[17] to provide two tracts of land in Jasper County totaling 1,690 acres in supposedly additional mitigation. E-mail of Bailey to DiNovo, dated Nov. 9, 2011 (offering two tracts of land for 1,690 acres in Jasper County as mitigation). However, those two tracts of land are part of the Jasper Ocean Terminal study site and currently subject to options to purchase by the GPA and the South Carolina State Ports Authority under the *Intergovernmental Agreement for Development of a Jasper Ocean Terminal on the Savannah River Within the State of South Carolina*, dated January 27, 2008 (IGA). See Savannah Riverkeeper v. DHEC, Docket No. 11-ALJ-07-0618-CC, GPA Resp. to Requests for Admissions at 6, dated April 3, 2012 (admitting

[17] At the DHEC Board level, the Savannah Corps actually refused to make any accommodation for additional wetlands mitigation. Instead, DHEC negotiated with the GPA, which DHEC lacked the authority to do as that authority lies solely with the Commission.

that the two referenced properties are subject to the IGA); E-mail Exchange Between Rowe and Preston, dated Jan. 17, 2012 (noting that the Savannah Corps and GPA "basically offered our own land ... as mitigation"). In the DHEC Decision, the Savannah Corps made no concessions on wetlands mitigation, and the Savannah Corps and the GPA are now waffling on whether the offer of those parcels (which was a meaningless offer in the first instance) will be maintained in any event. See DHEC Decision at 4; E-mail of Bailey to DiNovo, dated Nov. 9, 2011 (offering two tracts of land for 1,690 acres in Jasper County as mitigation); GPA Resp. to Requests for Admissions at 5, dated April 3, 2012 ("No final decision has been made regarding the specific properties that actually will constitute the mitigation required" in the DHEC Decision.).

Thus, the DHEC Decision does not protect South Carolina's wetlands and it is left to the Commission to require adequate mitigation for the wetlands impacts. In this context, the wetlands impacts for the -45 foot MLW alternative are significantly less than the impacts from the Savannah Corps' preferred alternative of -47 feet MLW. See, e.g., Savannah Corps, Final EIS 5-27, -28 tbl. 5-11, -13, 5-38 tbl. 5-19 (with flow rerouting, 45 foot alternative impacts 32 acres of wetlands/marsh and the 47 foot alternative impacts 223 acres of wetlands/marsh), Final GRR at 153 tbl. 8-3.

Further, looking at the mitigation sequencing of wetlands mitigation, the Savannah Corps' proposal is deficient and fails to follow the Section 404(b)(1) Guidelines, 40 C.F.R. Part 230 (Guidelines).[18] 33 C.F.R. § 335.2; see U.S. Army Corps of Eng'rs, Planning and Guidance Appx. C, ER 1105-2-100 at C-41 ("During feasibility planning, District commanders shall conduct and, to the fullest extent practicable, complete the investigations and analyses required by the Section 404(b)(1) Guidelines."). The Guidelines sequence wetlands mitigation as "avoid, minimize, and compensate."

[18] "The purpose of these Guidelines is to restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material." 40 C.F.R. § 230.1(a).

Although this is the standard applied to any applicant for a permit from the Savannah Corps, the Savannah Corps fails to apply the appropriate standard to its own project. The Savannah Corps fails to adequately consider the first component of "avoidance" and instead moves directly to "minimize" (for example, flow rerouting) and "compensate" (for example, offering some acreage for the Savannah National Wildlife Refuge). This failure undermines the credibility of the purported protection of the wetlands advanced by the Savannah Corps.

Moreover, as noted, the Savannah Corps offered no functional assessment of wetlands in the Draft EIS and only a cursory treatment in the Final EIS. The application of the SOP is suspect, but ultimately, *if properly applied*, may provide a useful surrogate for determining appropriate mitigation. However, the Savannah Corps provides an incomplete accounting of all the wetlands impacts and improperly uses the mitigation factor weights, which ultimately results in a proposed mitigation package that does not accurately represent the impacts of the SHEP. ARCADIS, Wetland Mitigation at 3-4 (May 2, 2012). Even assuming the Savannah Corps' accounting of impacts is within the magnitude of the actual impacts, which is giving the Savannah Corps the benefit of the doubt, applying realistic and proper weighting to the values of the impacts and restoration yield a markedly different result than that found in the Final EIS:

Factor	SOP Worksheet	Current Weight	Proposed Weight	Rationale for Revision
A. Adverse Effects/Impact Factors				
Dominant effect – Freshwater Marsh	Required Mitigation Credits	0.5	1.6	Shading (0.5) of a freshwater marsh would typically reduce or eliminate the coverage of plant species, but the area would still be a freshwater marsh. The proposed impacts will result in significant changes in floristic composition, species richness and will result in a different type of wetland, which are effects that would be more closely associated with impounding, for a level of 1.6.

Factor	SOP Worksheet	Current Weight	Proposed Weight	Rationale for Revision
Dominant effect – Salt Marsh	Required Mitigation Credits	0.0	1.4	The published scale range of the SOP for this factor does not include zero. The smallest weight is 0.5. The proposed impacts will result in changes in floristic composition, species richness and will result in a different type of wetland, which are effects that would be more closely associated with draining, at a weight of 1.4.
Preventability – Freshwater Marsh and Salt Marsh	Required Mitigation Credits	0.5	1.0	Given the opposition to this project and the potential environmental impacts associated with this project a weighting of at least 1.0 is more applicable.
B. Restoration, Enhancement Creation Factors				
Net improvement Vegetation	Proposed Restoration/ Enhancement	1.4	0.1	This is for the conversion of freshwater and salt marsh to brackish marsh. The Savannah Corps weighted this as "Complete Restoration" with a weight of 1.4. While there should be some credit for not completely eliminating the 861 aces of freshwater and salt marsh, a weighting of minimal enhancement, or 0.1, would be more appropriate than the 1.4 that is given for a complete restoration project.
Net improvement Hydrology	Proposed Restoration/ Enhancement	1.4	0.1	This is for the conversion of freshwater and salt marsh to brackish marsh. The Savannah Corps weighted this as "Complete Restoration" with a weight of 1.4. While there should be some credit for not completely eliminating the 861 aces of freshwater and salt marsh, a weighting of minimal enhancement, or 0.1, would be more appropriate than the 1.4 that is given for a complete restoration project.
Kind	Proposed Restoration/ Enhancement	0.6	0.2	Since this component of the mitigation is created through the conversion of freshwater and salt marsh to brackish marsh, a more appropriate weighting is 0.2 (out of kind).

ARCADIS, Wetland Mitigation at 4-5 (May 2, 2012). These improved and more reasonable values also reflect the statutory requirements and the U.S. Army Corps of Engineers' policy towards wetlands mitigation. The statute provides: "There is established, as part of the Corps of Engineers water resources development program, an interim **goal of no overall net loss of the Nation's remaining wetlands base**, as defined by acreage and function, **and a long-term goal to increase the quality and quantity of the Nation's wetlands**, as defined by acreage and function." 33 U.S.C.A. § 2317(a)(1) (emphasis added). The applicable policy states:

> Wetlands; District commanders shall ensure that adverse impacts to wetland resources are fully mitigated. Mitigations shall be accomplished through appropriate actions taken to avoid, minimize, and compensate for unavoidable losses as required to clearly demonstrate efforts made to meet the administration's goal of no net loss of wetlands.

U.S. Army Corps of Eng'rs, Planning and Guidance Appx. C, ER 1105-2-100 at C-17.

Based on the Savannah Corps' calculations, the impact on wetlands requires 1,643 acres of preservation. Savannah Corps, Final EIS at 5-37 tbl. 5-17, 5-38 tbl. 5-19; Final GRR at 167 tbl. 9-7. However, as noted by DHEC and as explained herein, that calculation underestimates the actual preservation amount required. In actuality, the total credits required for the SHEP (at a controlling depth of -45 feet MLW) are 7,212. ARCADIS, Wetland Mitigation at 5 (May 2, 2012). Taking into account the existing mitigation plan, this more appropriate application of the SOP in light of the guiding policies results in a remaining credit deficit of 3,777. ARCADIS, Wetland Mitigation at 6 (May 2, 2012). These credits may be earned through creation, enhancement and restoration, and/or preservation, in combination. According to the SOP, no more than 50% of the mitigation for the impacts may come from preservation. The Commission's policy is a preference for preservation. Applying a 50% preservation requirement to the 7,212 credits required results in 3,600 credits

devoted to preservation. Using a 1.2:1 ratio results in a requirement to preserve 3,000 acres.[19] Crediting the 1,643 acres of preservation the Savannah Corps currently proposes leaves a deficit of 1,357 acres required for the preservation component. The remaining 2,150 credit deficit may be split between creation and enhancement. As enhancement has a higher success rate, it is the preferred mitigation method of natural resource agencies. Using a credit to acreage ratio of 2.7:1 for creation and 4.7:1 for enhancement, an additional 100 acres is necessary for creation and an additional 400 acres through enhancement or restoration.[20] ARCADIS, Wetland Mitigation at 6 (May 2, 2012). Therefore, to mitigate for the remaining credit deficit for the wetlands impacts of the SHEP, the Savannah Corps must provide the following:

Type	Acres
Creation of Tidal Fresh or Brackish Marsh	100
Enhancement/Restoration of Drained Tidal Fresh or Brackish Marsh	400
Preservation	1,357

ARCADIS, Wetland Mitigation at 6 (May 2, 2012).

The Savannah Corps may select from one of three options[21] to comply with this wetlands mitigation requirement, which is in addition to (and not in lieu of) all other mitigation features described in the FEIS:

[19] The 1.2:1 ratio is devised from applying a value to three mitigation elements: 0.3 to threat, 0.4 to kind, and 0.5 to control. These are the same values and the same ratio utilized by the Savannah Corps and DHEC in its wetlands mitigation calculations.

[20] While this 100/400 split is consistent with mitigation policies, the Commission would consider allowing the Savannah Corps to reallocate the creation and enhancement/restoration components differently provided the credit requirement is met and the Commission approves the reallocation.

[21] The Commission would consider a blending of these three elements to satisfy the credit requirement of 7,212 upon a request from the Savannah Corps.

a) Submit a mitigation plan to the Commission for approval to address each element and approve each property or activity identified by the Savannah Corps to satisfy each component within the Lower Savannah watershed; or

b) Withdraw credits from an approved mitigation bank in South Carolina within the Lower Savannah watershed and provide credit withdrawal documentation from the mitigation bank to the Commission; or

c) Provide a payment of $9,500,000 to the South Carolina Conservation Bank, with the stipulation that the Conservation Bank must use such funds for the requisite preservation of wetlands and/or upland buffers that directly benefit adjacent wetlands in the Lower Savannah watershed, and a payment of $9,675,000 to the South Carolina Department of Natural Resources, with the stipulation that DNR must use such funds for the requisite creation, restoration, or enhancement of wetlands in the Lower Savannah watershed.[22]

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[22] The preservation figure is calculated by applying $7,000 per acre value to the total required acreage of 3,500, calculated as an average of the per acre cost assigned to the Jasper area by the Savannah Corps and the GPA. See IGA, dated Jan. 28, 2008 (assigning a value of $5,000 per acre for the acreage at the Jasper Terminal Study Site, including the acreage initially offered by the Savannah Corps and the GPA to DHEC for mitigation); Mem. of Moffatt & Nichol, Task 1 DMMP Feasibility Study at 9 (June 23, 2009) (citing William Bailey of the Savannah Corps as providing a per acre salt marsh cost of $9,000).

The restoration and enhancement figure of $19,350 per acre is based on a weighted average of the credit ratio for creation and restoration with an approximate $4,500 cost per credit.

This represents a significant discount from the prevailing market rate and average per acre cost of other wetlands mitigation undertaken by the Savannah Corps. The cost of marsh mitigation using Plan 6A for flow rerouting is $60,000 per acre. Savannah Corps, Final GRR at 165 tbl. 9-5. The prevailing rate of a credit in a mitigation bank in the Jasper and Allendale County area is approximately $4,500 per credit, and considering a typical ratio of 10-12 credits per acre, the per acre cost is $45,000-$54,000. See Savannah Corps, Final EIS Appx. A at 744.

(2) Water Quality

Probably the most significant impact of the SHEP is the negative and adverse impact on the Savannah estuary. Savannah Corps, Final EIS at 5-42. Specifically, the negative and adverse impact on dissolved oxygen (DO) levels in the Savannah River are of particular concern because the SHEP would adversely impact an already impaired waterbody. DHEC, Summary of Issues and Staff Position at 3 (Oct. 31, 2011) (existing DO levels "already contravene" water quality standards); Ltr. of Beckham to Bailey, dated March 3, 2011 (the additional DO impacts from the SHEP are "not consistent with the antidegra[da]tion rules of Regulation 61-68"); see S.C. Code Ann. Regs. 61-68.D. A Total Maximum Daily Load (TMDL)[23] restriction is already in place, with a draft TMDL issued by EPA in 2006 with a "no additional discharge"[24] recommendation that was slightly modified in 2010. U.S. Envtl. Protection Agency Region 4, Draft Revised Total Maximum Daily Load For Dissolved Oxygen In Savannah Harbor, Savannah River Basin (April 2010).

One of the consequences of low DO is the adverse impact on fish and wildlife. As the Commission's experts explain, "[w]ater column dissolved oxygen in an estuary is directly related to the diversity and abundance of organisms. Too little dissolved oxygen and diversity and abundance can drop to undesirable levels. The effect [can] be acute, resulting in short term fish kills or chronic

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[23] As the EPA explains, a TMDL

> is a tool for implementing State water quality standards and is based on the relationship between pollution sources and in-stream water quality conditions. The TMDL establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby provides the basis for States to establish water quality-based controls. These controls should provide the pollution reduction necessary for a waterbody to meet water quality standards.

U.S. Envtl. Protection Agency, Guidance For Water Quality-Based Decisions: The TMDL Process, EPA 440/4-91-001 (April 1991). Because a TMDL is a tool for State water quality standards, and a TMDL exists for the Savannah Harbor, it is appropriate to utilize this TMDL in the analysis.

[24] As previously discussed, the dredging activity associated with the SHEP is a "discharge" with the result of lowering the DO in the waterbody.

resulting in the extirpation of entire aquatic populations." ARCADIS, Dissolved Oxygen Analysis of the SHEP at 1 (April 25, 2012). "If DO concentrations decrease to unacceptable levels, it could have deleterious effects on fish and other aquatic organisms." Savannah Corps, Final EIS at 5-42. "Sturgeon have been shown to be impacted by low dissolved oxygen levels and mortality of sturgeon can occur within hours of exposure to low dissolved oxygen." Savannah Corps, Final EIS Appx. Z at 189 (Nat'l Marine Fisheries Serv., Biological Op., dated Nov. 4, 2011); see Ltr. of Frampton to Hall, dated Jan. 25, 2011 (expressing concern that lowered DO levels would adversely impact fish and wildlife). In fact, one of the mitigation components for the adverse impacts to the endangered Shortnose and Atlantic Sturgeon is the construction of an off-channel rock ramp that ***theoretically*** will allow passage of the fish upstream to historic spawning habitat (which would constitute "out-of-kind" compensatory mitigation for loss of downstream foraging habitat. See Savannah Corps, Final EIS at 5-184; Savannah Corps, Final EIS Appx. Z at 191-94 (Nat'l Marine Fisheries Serv., Biological Op., dated Nov. 4, 2011). However, low levels of DO not only may lead to the death of these endangered species, but also could serve as a stressor and may create an artificial "wall" within the waterbody that prevents movement upstream (which, with a low level segment above the off-channel rock ramp, would negate the value of this proposed mitigation).

Thus, the level of DO is of significant concern in this process. The Savannah Corps in fact acknowledges that DO

> is a major issue when evaluating the economic feasibility and environmental acceptability of the [SHEP]. DO levels are already critical in the harbor in the summer months, and further reductions in DO could adversely affect fishery and benthic resources. Improving DO in a deep-draft harbor is a difficult task.

Savannah Corps, Final EIS Appx. Q at 11. Difficult or not, the Savannah Corps is obligated by law and policy to mitigate for harm to DO. The U.S. Army Corps of Engineers' policy "is to **protect all existing and future uses including assimilative capacity**, aquatic life, water supply, recreation,

industrial use, hydropower, etc. Where uses are degraded it is the national goal to restore those degraded waters to more productive conditions." U.S. Army Corps of Eng'rs, Water Quality and Environmental Management For Corps Civil Works Projects, ER 1110-2-8154 at 2 (emphasis added). Thus, the Savannah Corps has an obligation and responsibility to mitigate for the water quality degradation associated with the SHEP.

To satisfy its burden in this regard, the Savannah Corps must provide a mechanism to provide reasonable assurance the DO impacts will be adequately mitigated. The Savannah Corps' present DO mitigation plan for a controlling depth of -45 feet MLW[25] includes the operation of the oxygen injection system with 8 Speece cones for approximately 120 days during the summer months. Savannah Corps, Final EIS at 5-53, tbl. 5-27; Final GRR at 172 tbl. 9-10. Speece cones are a mechanical process that removes water from the river via pipes, "super-saturates" it with oxygen, and then returns the water to the river. The Savannah Corps developed this mitigation plan based on the operation by the GPA of two Speece cones for about 40 days from August until September 2007 in an effort to determine the efficacy of the oxygen injection system. Savannah Corps, Final GRR Appx. C 1.1.48 at ES-1. Notably, the "demonstration project" in 2007 and modeling failed to account for point source dischargers in the area—a critical omission. Because a re-run of the model showed that water quality standards would not be met, additional Speece cones have been added to the proposal to theoretically compensate for the deficiency. See Savannah Corps, Final GRR at 174. The Savannah Corps also has revised and updated model runs and reports to try and justify the use of this oxygen injection system into an estuarine environment. Savannah Corps, Final GRR Appx. C 1.1.50 at 7. Despite these efforts, environmental protection and natural resources agencies, including this Commission, remain unconvinced. For example, an independent peer review found

[25] The DO impacts independently justify this controlling depth on the basis of a lesser adverse impact and a reduced level of uncertainty and risk when combined with the proposed mitigation and remedy should the mitigation measure of an oxygen injection system fail.

the Savannah Corps' conclusion of the viability of the oxygen injection system based on this demonstration project and study is not supported by the monitoring data. Savannah Corps, Final EIS Appx. E at 36. "The review indicated that the natural tidal cycle accounted for most of the variation in dissolved oxygen levels during the demonstration." Savannah Corps, Final EIS Appx. E at 36. Ultimately, the review did not conclude that the Speece cone oxygen injection system could not work at all or did not have some benefit, but did determine that "it is difficult to assess how effective the oxygen injection would be at reducing the dissolved oxygen impact." Savannah Corps, Final EIS Appx. E at 36.

The Speece cone oxygen injection technology is unproven on this scale and at this level, and the brief operation of two Speece cones at one location does not sufficiently demonstrate the viability of the technology, nor its efficacy on an on-going basis. The Savannah Corps acknowledges in its Risk and Uncertainty Analysis that the

> [u]se of oxygen injection in an estuarine environment is relatively new.... [The technology] has not been used before to treat the large volumes of water typically associated with tidal estuaries. Since this technology has not been applied before to this situation, there **is substantial uncertainty about whether the system will be as effective as it is intended**.

Savannah Corps, Final EIS Appx. Q at 10 (emphasis added); Savannah Corps, Final EIS Appx. A at 494 ("Injection of oxygen into an estuary to improve dissolved oxygen levels is a relatively new concept."); Ltr. of Hall to Kertis, dated Nov. 4, 2008 (characterizing the DO injection system as having a "great deal of risk" and "high degree of uncertainty"). The NMFS agrees that there is significant uncertainty with this process, stating:

> **NMFS believes there is a high degree of uncertainty associated with the proposed use of an oxygen injection system**.... These systems have not been previously used in a tidal system such as the Savannah River, so their efficacy cannot be thoroughly assessed before installation.

Savannah Corps, Final EIS Appx. Z at 189 (Nat'l Marine Fisheries Serv., Biological Op., dated Nov. 4, 2011) (emphasis added). The Savannah Corps has further acknowledged that "[t]his is the first time that Speece Cones have been used in tidal systems to improve dissolved oxygen in harbor." Savannah Corps, Final EIS Appx. A at 834. Further, "there is little objective doubt that oxygen injection can add oxygen to the water column, the **concern is whether the injected oxygen would spread throughout the estuary**." Savannah Corps, Final EIS Appx. A at 724; see E-mail of Cantrell to Bailey, dated May 17, 2011 ("There are studies that suggest Speece cones are primarily a deep water technology not suitable for shallow water ... and that sufficient water depth at the injection point is a critical design consideration."). In sum, the Savannah Corps' approach to mitigation of water quality issues is quite novel and unproven.

Yet despite the novelty of this approach, there is almost no accounting by the Savannah Corps for any level of uncertainty with the Speece cones. The mitigation plan incorporates only a minimal efficiency adjustment, which may not prove accurate or may be totally consumed under full-scale, real world operations.[26] The Savannah Corps has offered no other consideration for the significant level of uncertainty and risk with the efficacy of the oxygen injection system. Thus, although the Savannah Corps itself acknowledges—and the NMFS, resource agencies, and independent review agree—that the oxygen injection system proposed for the SHEP is novel and may or may not work in an estuarine system like that found in the Lower Savannah, it has failed to

[26] In this regard, another troublesome issue is the suspect modeling. Because the waterbody is already subject to a TMDL for DO levels, which is what the regulated community must abide by, it is incongruous for the Savannah Corps to develop its own model to examine the impact of its discharge. And in fact a comparison of the two models demonstrates that the Savannah Corps has simultaneously underestimated the existing level of impairment and overestimated its efforts at mitigation when compared to the TMDL modeling. ARCADIS, Dissolved Oxygen Analysis of the SHEP at 2, 3 (April 25, 2012).

give adequate consideration to the uncertainty that arises from the employment of this novel approach.[27]

Viewed in this light, DHEC was justifiably skeptical both of the system's viability and its ongoing reliability. In a March 3, 2011 letter, DHEC stated that "[u]ntil the uncertainty from the DO impacts and mitigation has been thoroughly investigated, and reasonable assurance is provided that the project will protect existing uses and water quality for the life of the project, [DHEC] cannot find the project consistent with the requirements of Regulation 61-101." Ltr. of Beckham to Bailey, dated March 3, 2011. DHEC continued to express significant concern about the viability of the DO injection system and its ability to remediate for the impact and satisfy water quality standards. DHEC, Summary of Issues and Staff Position at 7 (Oct. 31, 2011) (DHEC "does not have a reasonable assurance that the [SHEP] will be consistent with water quality standards...."); DHEC, Staff Assessment at 8 (Sept. 30, 2011) ("[DHEC] continues to have outstanding concerns about the use of mechanical means to offset the DO impacts of the project."); Ltr. of Beckham to Bailey, dated June 16, 2011 ("As discussed in the meeting held on May 12, 2011, [DHEC] is concerned about the ability of the Speece cones to adequately oxygenate the shallow water areas of the Back River."). These concerns and issues are well founded and shared by the Commission. See, e.g., S.C. Code Regs. 19-450.9.A.3 (Commission charged with considering a project's impact on water quality).

Another problem with this novel mitigation plan is that the Savannah Corps only proposes a mitigation target success rate for the DO injection system of 97%. Savannah Corps, Final EIS at 5-54, Appx. N at 446, Final GRR Appx. C. 1.1.4 at 10. In other words, the Savannah Corps is failing

[27] As a result, every effort must be made to minimize the adverse impacts, sufficient pre-, during, and post-construction monitoring must be provided, and adjustment mechanisms and remedies must be in place to address a situation in which the proposed oxygen injection system fails to satisfactorily mitigate for the SHEP's impact.

to mitigate for 100% of its impact in an already impaired waterbody for a water quality issue that is critical for fish and wildlife—including endangered species. While it is possible certain areas of the Savannah River may experience an improvement of DO levels over pre-project conditions, assuming the oxygen injection system performs adequately, that does nothing to remedy the river segments that will experience a decreased DO level in post-project conditions under the Savannah Corps' proposed mitigation.

The applicable standard in South Carolina (mirrored in Georgia) is a "daily average not less than 5.0 mg/L with a low of 4.0 mg/L, with an allowable decrease of only 0.1 mg/L."[28] S.C. Code Ann. Regs. 61-68.D., 61-69. Planning for a failure to mitigate overall for 3% of a detrimental impact[29] (including individual segment failures) when the pollution level may only legally decrease by a maximum of 0.1 mg/L in a waterbody already failing to meet the water quality standard can prove significant and considerable. ARCADIS, Dissolved Oxygen Analysis from the SHEP at 2 (April 25, 2012). For example, in the river segment identified as FR11 by the Savannah Corps (and segment FR-27 in the TMDL), the pre-SHEP condition is approximately 4.93 mg/L at the 10th percentile. ARCADIS, Dissolved Oxygen Analysis from the SHEP at 4 (April 25, 2012). In other words, that segment is close to attaining the water quality standard. However, even after the oxygen injection system mitigation is implemented, that stretch is modeled to have a DO level of approximately 2.72 mg/L at the 10th percentile—a decrease of 44.8%. Savannah Corps, Final GRR Appx. C. 1.1.4 at B-3 tbl. B-2; ARCADIS, Dissolved Oxygen Analysis from the SHEP at 4 (April 25, 2012). For the

[28] "This means the dissolved oxygen metric of concern in the SHEP and TMDL models is the 10th percentile value for dissolved oxygen, because the 10th percentile is the value that is not expected to be exceeded more than 90% of the time." ARCADIS, Dissolved Oxygen Analysis from the SHEP at 3 (April 25, 2012).

[29] In other words, what "is relevant is that it is possible for the SHEP mitigation plan [to] meet the SHEP 97% criteria **while at the same time causing a 3% decrease in dissolved oxygen that would exacerbate the dissolve oxygen deficit being addressed by the TMDL.**" ARCADIS, Dissolved Oxygen Analysis from the SHEP at 2 (April 25, 2012) (emphasis added).

river segment identified as BR3 by the Savannah Corps (and segments BR-01 and LBR-02 in the TMDL), the pre-SHEP condition is approximately 3.44 mg/L at the 10th percentile, which is below the water quality standard. ARCADIS, Dissolved Oxygen Analysis from the SHEP at 4 (April 25, 2012). Even with the oxygen injection system, this segment will not achieve the original level, but instead will be a reduced 3.16 mg/L, which is a 8.14% reduction. Savannah Corps, Final GRR Appx. C. 1.1.4 at B-3 tbl. B-2; ARCADIS, Dissolved Oxygen Analysis from the SHEP at 4 (April 25, 2012).

The Savannah Corps also has consistently refused to provide any assurance on a going-forward basis that the operation and maintenance of the oxygen injection system will be adequately funded. Instead, the Savannah Corps has opined that **if** funds are available through annual appropriations, it will maintain and operate the system, leaving unspoken the plausible alternative that the system will not be maintained or operated if funds are not available. Ltr. of Hall to Wilson, dated Nov. 4, 2011. At the DHEC Board level, GPA volunteered to offer some sort of financial assurance, but the amount of that assurance was never agreed upon prior to the DHEC Decision. The failure to ensure funding and lack of substantive protection to the State's environmental resources provides little comfort to the citizens of South Carolina who must live with the consequences of collapse of this proposed mitigation component. This situation is unacceptable. It is thus left to the Commission to define the appropriate financial assurance to attempt to ensure adequate funding for maintenance and operation exists.

The U.S. Army Corps of Engineers has issued guidance on when financial assurances should be used in the issuance of permits. U.S. Army Corps of Eng'rs, Guidance on the Use of Financial Assurances, and Suggested Language for Special Conditions for Department of the Army Permits Requiring Performance Bonds, Regulatory Guidance Letter No. 05-1 (Feb. 14, 2005). Under the guidance, financial assurance may be appropriate to "ensure the initiation and successful completion

of required compensatory mitigation," especially when the mitigation requires new or unproven technology. Id. at 1-2. Pursuant to the guidance, the financial assurance should consider the size and complexity of the project and "should be sufficient to cover contingency actions." Id. at 2; see 33 C.F.R. § 332.1(n)(1) (requiring "sufficient financial assurances to ensure a high level of confidence" that the mitigation will succeed); Savannah Corps, Final EIS Appx. Z at 189 (Nat'l Marine Fisheries Serv., Biological Op., dated Nov. 4, 2011) ("Contingency funding shall be included in the adaptive management plan to accommodate needed modifications to address low levels of dissolved oxygen. This measure is intended to ensure that impacts from SHEP are no worse than the [Savannah Corps'] predictions in the DEIS.").

In sum, as discussed, there are significant risks and uncertainties inherent in the proposed mitigation plan for dissolved oxygen. U.S. Army Corps of Engineers' policy states:

> Where the quality of a water resource supports a diverse, productive, and ecologically sound habitat, those waters will be maintained and protected unless there is compelling evidence that to do so will cause significant national economic and social harm. No degradation is allowed without substantial proof that the integrity of the stream will not diminish. In all cases, the existing instream water uses and the water quality necessary to protect them will be maintained.

U.S. Army Corps of Eng'rs, Water Quality and Environmental Management For Corps Civil Works Projects, ER 1110-2-8154 at 2. As discussed in this decision, the Savannah estuary supports two endangered species (to date) and a diversity of fish and wildlife, for which the Striped Bass serves as an indicator species. Further, the Savannah Wildlife National Refuge abuts the project area and is impacted by the SHEP. Despite the potential of harm to these species, the Savannah Corps proposes to mitigate the harm through a novel and largely untried approach for which it has not adequately considered the risks and uncertainties and has not considered the availability of adequate and guaranteed funding. The novel oxygen injection system provides a thin reed on which to rest

the mitigation of harm and the preservation of these species. Therefore, the Commission concludes that the Savannah Corps' mitigation plan is not adequate.

For additional reasons discussed elsewhere, the Commission concludes that a depth of -45 feet MLW provides more reliable mitigation by minimizing adverse impacts due to deepening. A controlling depth of -45 feet MLW is justified on the basis of mitigating for the high uncertainty and risk associated with a deeper channel. A depth of -45 feet MLW will still have an adverse impact on DO levels that will require a significant commitment on monitoring and remediation. However, the adverse impacts are lessened and the degree of uncertainty and risk is brought within tolerable levels if mitigated properly. See Ltr. of Frampton to Hall, dated Jan. 25, 2011 (recommending a depth of -45 feet based on minimizing adverse impacts to DO levels to protect fish and wildlife). This is consistent with the Corps of Engineers' policy. A -45 foot MLW depth and the additional monitoring and mitigation are required for water quality because the Savannah Corps has failed to offer "compelling evidence" that these efforts at maintaining water quality will cause "significant national economic harm." See U.S. Army Corps of Eng'rs, Water Quality and Environmental Management For Corps Civil Works Projects, ER 1110-2-8154 at 2. Indeed, the environmental impact, including the adverse impact on water quality, between a -45 and -47 foot MLW depth is significant, while the economic benefit is minimal.

Another step towards better understanding the risk and actual viability of the oxygen injection system would be to run the entire 8-cone oxygen injection system from April 1 until September 30 with continuous water quality monitoring prior to the commencement of any dredging. This data would be considered in additional modeling and should provide better predictions of future levels of DO. As the Savannah Corps has stated, the

> Adaptive Management Plan would permit modifications to the oxygen injection system if that is determined to be required. Modifications to the oxygen injection system could include changes to the amount of oxygen that is injected, modification of the

> equipment, changes in the location of the oxygen injections sites, changes in the number of oxygen injection sites, etc.

Savannah Corps, Final EIS Appx. A at 494; see Savannah Corps, Final EIS at 5-159. Therefore, once this modeling is complete, the Savannah Corps may revise its mitigation plan to add Speece cones, add locations, modify flow regimes, or develop an alternative option, if necessary, to fully mitigate for the DO impacts.[30] Once the additional modeling results and revised mitigation plan (necessary to fully mitigate for the impact) are approved by the Commission, then dredging may commence.[31]

Given the high degree of risk and uncertainty of this new and novel application of this oxygen injection system into an estuarine system and the impacts of failure, it is crucial that an intensive and comprehensive monitoring scheme be implemented with appropriate remedial measures available should the oxygen injection system fail. See Ltr. of Fleming to Hall, dated Jan. 28, 2011 Enc. at 4 ("Because of uncertainties associated with modeling, EPA recommends that DO levels be monitored and adaptively managed to ensure adequate oxygen injection."). Monitoring is required, but is especially important here given the uncertainty of the oxygen injection plan proposed by the Savannah Corps. U.S. Army Corps of Eng'rs, Appx. C, ER 1105-2-100 at C-19 ("Monitoring is appropriate for all mitigation actions to insure that those actions have achieved the objective. The **level of monitoring should be consistent with the magnitude of the project and the degree of risk and uncertainty** with the probable success of mitigation.") (emphasis

[30] Ultimately, if after construction the proposed mitigation continues to fail to remediate the DO impact, the Commission may require the Savannah Corps to modify its maintenance dredging schedule to allow sedimentation to reclaim the depth and restore the channel to a shallower depth, or even its present depth.

[31] These requirements are consistent with the terms GPA presented to the DHEC Board acknowledging that dredging may not begin until the DO mitigation components are acceptable. GPA, Submission to DHEC at 7 (Nov. 10, 2011) ("If the system does not mitigate DO levels, **dredging** either **will not commence** or will be stopped until corrective action is taken.") (emphasis added).

added). To monitor the impacts, the Savannah Corps has committed to installing several additional water quality monitors and revising the modeling based on observed measures in the waterbody. Savannah Corps, Final EIS Appx. D. This water quality monitoring must be developed and tested in conjunction with deployment of the entire 8-cone oxygen injection system described in the preceding paragraph.

Finally, the mitigation plan cannot work if it is not adequately funded over the life of the project. Here, the project "life" is 50 years. The Savannah Corps estimates the oxygen injection system for a controlling depth of -45 feet MLW will have an annual cost of $908,500. Savannah Corps, Final GRR at 199. Using the federal discount rate of 4.125%, the present value of 50 years of operation and maintenance costs is $19,893,920.35.[32] Therefore, the Commission concludes that a financial instrument such as an escrow, surety bond, or letter of credit satisfactory to the Commission must be provided prior to the commencement of dredging.[33]

These additional elements of a mitigation plan are necessary to protect the water quality, environment, species living in the Savannah estuary, assimilative capacity in the River, and will ensure a timely response to any developing harm that may yet be unidentified.

(3) Fish and Wildlife

The SHEP will have an adverse impact on several fish species. Of greatest concern to the Commission are the Shortnose and Atlantic Sturgeon, both of which are listed as federal endangered species, and the Striped Bass. See 77 Fed. Reg. 5914 (Feb. 6, 2012) (listing the Atlantic Sturgeon as an endangered species); 32 Fed. Reg. 4001 (March 11, 1967) (listing the Shortnose Sturgeon as an

[32] Given the inherent uncertainty and the possibility of requiring additional Speece cones or locations, this amount may actually be less than necessary, thus representing a conservative amount that favors the Savannah Corps.

[33] The Commission would consider allowing a third party such as GPA to satisfy this requirement under appropriate terms and conditions.

endangered species). The fisheries impacts, and in particular the impacts to sturgeon and bass under the proposed mitigation plan, are acceptable only at a controlling depth of -45 feet MLW. See Savannah Corps, Final EIS at 5-86 tbl. 5-35, 5-87.

This conclusion accords with the comments of the U.S. Fish and Wildlife Service, who noted that "[b]ased on the information obtained for the specific purpose of evaluating this project, it is clear that the 44 and 45-foot alternatives would have much lower impacts on fish and wildlife resources." Savannah Corps, Final EIS Appx. E at 46 (U.S. Fish and Wildlife Serv., Fish and Wildlife Coordination Act Report on Savannah Harbor Expansion (March 2011)). DNR echoed this sentiment. "DNR has concluded that the only deepening alternatives that could be considered minimally environmentally acceptable are the 44-ft alternative or the 45-ft alternative, provided the proposed mitigation for each of these alternatives proves to be successful." Ltr. of Frampton to Hall, dated Jan. 25, 2011. DHEC also voiced concern that the SHEP would result in unacceptable impacts to fisheries. "The loss of a significant portion of Shortnose sturgeon habitat due to lower [dissolved oxygen] levels and salinity intrusion is of particular concern." Ltr. of Beckham to Bailey, dated March 3, 2011; DHEC, Staff Assessment at 1, 3, 10 (Sept. 30, 2011) ("The loss of a significant portion of Shortnose sturgeon habitat due to lower [dissolved oxygen] levels and salinity intrusion is of particular concern.").

The Commission is concerned about the impact on the Striped Bass because it serves as an indicator species for the general health of the ecosystem for marine life.[34] See U.S. Envtl. Protection Agency, at http://www.epa.gov/bioiweb1/html/fish_temperate_basses.html (discussing the use of

[34] This is not to minimize the importance of Striped Bass in its own right. Further, the Savannah Corps also used other fish as "surrogates" and indicator species, including the Southern Flounder and American Shad. The impacts on these indicator species are similarly lessened with at a controlling depth of -45 feet MLW as opposed to -47 feet MLW. Savannah Corps, Final EIS at 3-21 tbl. 3-8.

the Striped Bass as a biological indicator species). As the Striped Bass goes, so goes the fisheries ecosystem. The Savannah Corps has recognized that the eggs, larvae, and spawning of the Striped Bass would be adversely impacted by the SHEP. Savannah Corps, Final EIS at 5-88, -89, 90 tbls. 5-37, -38, -39. However, the adverse impact at a depth of -45 feet MLW is a mere 2.9%, while the impact at a depth of -47 feet MLW is a much greater 26.9%, which the Commission deems to be an unacceptable impact.[35] Savannah Corps, Final EIS at 5-122, Appx. E at 38 tbl. 10.

The Savannah Corps' mitigation plan for flow rerouting and proposed oxygen injection system do not completely offset the adverse impacts to the sturgeon or bass. The Savannah Corps has acknowledged that even after implementation of the mitigation plan, "there would still be residual impacts to Shortnose sturgeon and Striped bass habitat," the mitigation plan "does not eliminate the impacts to Striped bass spawning habitat," and "that adverse impacts that would remain to Shortnose sturgeon and Striped bass after the flow altering and dissolved oxygen components of the mitigation plan are included remain at levels which warrant further mitigation." Savannah Corps, Final EIS Appx. A at 452, 453, 724. The Savannah Corps has proposed funding the Georgia Department of Natural Resources for restocking of the estuary with Striped Bass and has proposed an off-channel rock ramp fish passage to be constructed in South Carolina to mitigate for the impacts to the Shortnose Sturgeon. Savannah Corps, Final EIS at 5-115 to -121; see Savannah Corps, Savannah Harbor Expansion Mitigation – Fish Passage at the New Savannah Bluff Lock and Dam (May 11, 2011). However, these proposed measures fail to fully mitigate for the adverse impacts. More importantly, the Savannah Corps has failed to properly apply the mitigation policies by not avoiding or minimizing the impact in the first instance. U.S. Army Corps of Eng'rs,

[35] This is also reflected in the mitigation proposals for the Striped Bass. The mitigation cost for Striped Bass at -45 feet is $285,000, while at -47 feet the cost is $2,640,000. Savannah Corps, Final EIS at 5-123 tbl. 5-45.

Planning and Guidance Appx. C, ER 1105-2-100 at C-5, -6 (the Corps must avoid, minimize, rectify, reduce, and compensate for impacts, in that order of preference); U.S. Army Corps of Eng'rs, Water Quality and Environmental Management For Corps Civil Works Projects, ER 1110-2-8154 at 3 (stating the environment "shall be given equal standing" to other considerations and that the "Corps has a responsibility to preserve, protect, and where necessary restore that portion of the environment altered by Corps projects.").

Therefore, based on the impacts to fish and wildlife, and in particular two endangered species (Shortnose and Atlantic Sturgeon) and an important indicator species (Striped Bass), the Commission cannot approve a controlling depth below -45 feet MLW. This is consistent with other natural resources agencies and with the policies guiding the Savannah Corps, as well as the Commission's review criteria. Further, adequate protections for the Shortnose and Atlantic Sturgeon and Striped Bass and other affected marine life (such as sea turtles) are required through the appropriate implementation of dredging "windows," or seasonal restrictions. This includes prohibiting dredging operations in the Inner Harbor from March 16 to May 31 (to protect Striped Bass) and limiting dredging operations in the Outer Harbor to December 1 to March 31. Savannah Corps, Final EIS Appx. Z at 117, 135 (Nat'l Marine Fisheries Serv., Biological Op., dated Nov. 4, 2011).

(4) Disposal of Dredge Material

Cadmium compounds are listed as hazardous substances and toxic pollutants under the Clean Water Act. See 40 C.F.R. §§ 116.4, 401.15; S.C. Code Ann. Regs. 61-9 Appx. B; see also U.S. Dep't of Health & Human Servcs., Agency for Toxic Substances and Disease Registry, Draft Toxicological Profile for Cadmium at tbl. 8-1 (Sept. 2008) (listing government regulations and classifications of cadmium under applicable federal laws). Cadmium and cadmium compounds, relative to other heavy metals, are "relatively water soluble," are "more mobile" in soil, "generally

more bioavailable and tend to bioaccumulate." ARCADIS, Management of Cadmium Sediments at 2 (April 24, 2012).

Dredge material excavated between Stations 17+000 and 45+000 have an average cadmium concentration of 21.45 mg/kg.[36] Savannah Corps, Final GRR at 51. This exceeds the Effects Range Median (ERM) of 9.6 mg/kg by 223%, representing a potential for an environmental impact unless the dredge material is handled properly. Savannah Corps, Final EIS Appx. H at 32. The Savannah Corps proposes placing all of the cadmium-laden sediment in confined disposal facility (CDF) Sites 14A/B in Jasper County. Savannah Corps, Final EIS at 5-127, Appx. H at 36, Appx. M at 87. Further, the Savannah Corps proposes to place an approximately two-foot layer of material on the cadmium material for a "cap" in an effort to protect wildlife, such as birds, from exposure. Savannah Corps, Final EIS Appx. H at 37, Appx. M at 87.

The presence of high levels of cadmium in the dredge material and the proposal to dispose of this toxic material in South Carolina raises two questions: (1) has the Savannah Corps adequately studied and developed a disposal plan to protect the environment, including effluent discharge from the CDF sites into the Savannah River, and (2) in light of the future development of a Jasper Ocean Terminal at the disposal site, does the Savannah Corps' deposition of cadmium-laden material preclude use of the site for terminal development? The Final EIS and Final GRR fail to properly identify a model or plan to dispose of cadmium in a manner that provides a reasonable assurance of protection of water quality and the environment and natural resources, especially in light of the future use of the property as a secondary and cumulative impact. See Savannah Corps, Final EIS

[36] Importantly, a controlling depth of -45 feet MLW will decrease the amount of cadmium-laden dredge material that requires disposal. See Savannah Corps, Final EIS Appx. M at 33, 35, 36 tbls. 20, 21b, 21c. Thus, a shallower depth avoids adverse environmental impacts from additional deposition of cadmium-laden dredge material and minimizes some of the uncertainty associated with such quantities of this toxic material being deposited in South Carolina and its potential negative cumulative impact.

Appx. M (offering a discussion and identification of sediment but failing to offer a sufficient model or plan for addressing dredge material with elevated cadmium levels). "The primary risks for cadmium-impacted sediment releases are likely from management of CDF filling and terminal construction...." ARCADIS, Management of Cadmium Sediments at 3 (April 24, 2012). The potential pathways for exposure include:

1. Spills from the pipeline or sediment resuspension during dredging prior to placement in the CDF.
2. Elevated turbidity in surface water discharging from the CDF weir during placement of the cadmium-impacted material.
3. Inundation of river flooding CDF after placement of cadmium-impacted sediment, prior to 1-2 ft cover placement, and berm erosion during river flooding.
4. Physical mixing with overlying materials from the hydraulic placement process of the 1-2 ft cover or other physical disturbances such as 'mudwaving'.
5. Physical migration of cadmium-impacted sediment due to soft-soil deformation with ongoing fill placement as a function of filling sequence and timeline.
6. Cadmium-containing porewater migration to the surface of the cap during placement of the 1-2 ft cover from consolidation.
7. Berm slope instability during subsequent CDF raising that incorporates cadmium-impacted sediment in the failure zone.
8. Berm slopes (or terminal containment structures) instability during or after construction incorporating cadmium-impacted sediment.
9. Long-term groundwater fate-transport due to change in water chemistry and groundwater flow regime (potential groundwater flow path occurring through demarcation layers described for overlying elevated cadmium sediments).

10. Porewater migration from consolidation of sediment from weight of overlying fill and preloading required for terminal design.

ARCADIS, Management of Cadmium Sediments at 5 (April 24, 2012).

A concern arises under the plan to deposit the cadmium-laden material in Sites 14A/B in light of a future Jasper Ocean Terminal. Specifically, the Savannah Corps has proposed a plan to cap the cadmium-laden material in Sites 14A/B, but appears to have given no consideration to the impact of construction of a marine terminal on this cadmium material and the potential for soil compression and those impacts on the environment (such as the possibility of increased effluent with higher concentration of cadmium).

As discussed in more detail below, the Jasper Ocean Terminal is referenced in a Congressional directive to the Savannah Corps and in a bi-state agreement. Thus, the Savannah Corps has an obligation to consider the impact of this material deposition in light of the future use of this property as a marine terminal site, and not to take any action that would contaminate the site in a manner to increase environmental harm and risk and preclude the implementation of the Congressional directive and bi-state agreement for the development of the Jasper Ocean Terminal. For example, construction of the Jasper Ocean Terminal would add significant weight on top of the CDFs at Sites 14A/B, and the existing reports by the Savannah Corps offers no analysis on how this construction may impact the effluent discharges into the Savannah River. The Savannah Corps has also discussed implementing an "Easement Release Plan" that would reallocate the deposition of material between Sites 14A/B, but the Savannah Corps would need to revise its modeling or provide additional assurance or explanation of the handling of the cadmium-laden sediment under this new proposal prior to implementation of the Easement Release Plan. Moffat and Nichol, Easement Release Plan (Feb. 2012). Therefore, the Savannah Corps must undertake a sediment deposition analysis that accounts for a future Jasper Ocean Terminal, to be submitted to the Commission for

approval, prior to the deposition of any material with a cadmium level averaging above the ERM in Sites 14A/B.[37] See Savannah Corps, Final EIS Appx. M at 33-34, tbls. 20, 21. This additional analysis should include:

- Representative cross-sections of the CDFs (one per CDF) showing anticipated filling events with time and final CDF capping, plus the anticipated construction for the future Jasper Ocean Terminal. The cross-sections would define the conceptual model and better illustrate the relationship of the sediment containing elevated concentrations of cadmium relative to the currently know potential receptor (birds) in addition to other potential receptors based on construction sequence from existing conditions through terminal development.
- Cap modeling of porewater migration through the 1 to 2 foot cover of the CDF, and groundwater fate-transport modeling of a completed terminal.
- It is likely that existing and future CDF berms contain some level of cadmium based on the current practice for berm raising of using desiccated or drying river sediment for the berms. Therefore, sediment containing cadmium from berms could be released more readily than the carefully managed sediment identified as being the elevated cadmium-impacted sediment, so one question to be answered would be is the berm sediment above risk-based screening levels.

ARCADIS, Management of Cadmium Sediments at 4 (April 24, 2012). Therefore, it is appropriate to condition approval of the SHEP on the submission of a conceptual model and plan for the disposal of cadmium-laden dredge material acceptable to the Commission that accounts for secondary and cumulative impacts, and specifically the construction of a Jasper Ocean Terminal.

[37] This is in addition to the greater than 4 mg/kg cadmium concentration level the Savannah Corps proposes based on wildlife concerns. Savannah Corps, Final EIS Appx. E at 39, Appx. M at 93.

(5) Feasible and Viable Alternatives

The Commission cannot issue an authorization for the SHEP to move forward under applicable law unless the Savannah Corps demonstrates that no feasible alternative exists.[38] S.C. Code Ann. Regs. 19-450.9; see 33 C.F.R. § 335.4 ("All practicable and reasonable alternatives are fully considered on an equal basis. This includes the discharge of dredged or fill material into waters of the U.S. or ocean waters in the least costly manner, at the least costly and most practicable location, and consistent with engineering and environmental requirements."). In this case, the alternatives analysis is two-fold. First, is there an alternative depth that provides a feasible alternative to -47 feet MLW? Second, does the Jasper Ocean Terminal provide a feasible alternative to the SHEP?

The Savannah Corps identified depths of -44, -45, -46, -47, and -48 foot MLW depths as alternatives (in addition to a "no action" alternative). The Savannah Corps appears to have selected the depth of -47 feet MLW based on economics and then sought to address the environmental aspects. See DHEC, Staff Assessment at 5 (Sept. 30, 2010) ("By limiting the project purpose, the Corps may have excluded from consideration some feasible alternatives. It is possible that less environmentally damaging alternatives exist that could provide similar benefits to the national economy."). However, "[i]t is the policy of the Corps that the environment be given equal standing not simply consideration in all aspects of project management and the operational decision-making process." U.S. Army Corps of Eng'rs, Water Quality and Environmental Management For Corps Civil Works Projects, ER 1110-2-8154 at 3 (emphasis added). In other words, economics should not be the cart that drives the horse.

[38] Notably, at the November 10 Final Review Conference DHEC staff acknowledged that it abandoned the feasible alternatives analysis (which is also a component of the 401 Certification analysis). At the conference, DHEC's representative characterized the alternatives analysis as "vexing" and that DHEC was "not equipped to get into consideration of all the economic and political and social issues...." Transc. DHEC Bd. Mtg. at 24:5-15.

The Commission is tasked with balancing the economic benefits with the environmental harm, and also evaluating the environmental impacts of differing alternatives and conducting its own independent analysis. As discussed in this decision, the environmental impacts on wetlands, water quality, and fish and wildlife, independently and collectively, dictate that a shallower depth be authorized. In summary, the difference in adverse environmental impacts between controlling depths of -45 and -47 feet MLW is significant, and the difference in economic benefits is minimal. Balancing the environmental harm with economic benefits yields no other logical or supportable conclusion than approving and authorizing the SHEP at a controlling depth of -45 feet MLW.[39]

Next, despite entreaties by DHEC and EPA, the Jasper Ocean Terminal was given cursory evaluation by the Savannah Corps as a feasible alternative to the SHEP. Ltr. of Beckham to Bailey, dated March 3, 2011 (DHEC stating that the Jasper Ocean Terminal "should be given detailed consideration as an option" under a feasible alternatives analysis); Ltr. of Fleming to Hall, dated Jan. 28, 2011 Enc. at 15 (the Jasper Ocean Terminal should be examined as an alternative). This is so even though the Corps of Engineers has recognized that the region will need additional and improved navigational facilities beyond the SHEP and what GPA can currently provide. See Ltr. of Ass't Sec'y Darcy to Senator Graham, dated June 29, 2011. But the SHEP directly intersects with and impacts the Jasper Ocean Terminal by virtue of the fact that the SHEP's dredge material disposal plan calls for the deposition of material for a period of 50 years in confined disposal facilities identified as Sites 14A/B that are located at the future Jasper Ocean Terminal. Savannah Corps, Final EIS at 5-127, Appx. H at 36. These sites are also the subject of a Congressional directive for the Savannah Corps to evaluate removal of the disposal easements on Sites 14A/B in

[39] This is consistent with the policy of avoidance adopted by the U.S. Army Corps of Engineers. U.S. Army Corps of Eng'rs, Planning and Guidance Appx. C, ER 1105-2-100 at C-2 (""With respect to 'protecting the Nation's environment', **the Corps has adopted the standard that it 'is achieved when damage to the environment is eliminated or avoided** and important cultural and natural aspects of our nation's heritage are preserved."") (emphasis added).

furtherance of the development of the Jasper Ocean Terminal. Pub. L. 110-114, 121 Stat. 1186 § 4084 (Nov. 8, 2007).

The Jasper Ocean Terminal also is the subject of an *Intergovernmental Agreement For Development Of A Jasper Ocean Terminal On The Savannah River Within The State Of South Carolina* effective January 27, 2008, between the GPA, the Georgia Department of Transportation, and the South Carolina State Ports Authority (IGA). At full build out, the Jasper Ocean Terminal would have a capacity of about 7 million TEUs, which is larger than any existing marine terminal in Georgia or South Carolina. The IGA establishes the Joint Project Office (JPO) to administer the study and construction of the Jasper Ocean Terminal. The JPO has requested the Savannah Corps follow through on the Congressional directive and work towards releasing the disposal easements on Sites 14A/B. Pub. L. 110-114, 121 Stat. 1041, § 4084 (Nov. 8, 2007). However, the Savannah Corps "has advised GA DOT and the [JPO] that it would not consider releasing the disposal easements until development of the new container terminal is imminent, i.e. the developer obtains a Section 404 permit." Savannah Corps, Final EIS Appx. A at 512. But issuance of a Section 404 permit—an action by the Corps of Engineers—follows the completion of feasibility, navigation, dredge disposal, and environmental impacts analysis (also actions by the Corps of Engineers), part of which is now predicated on the release of the easements. The Savannah Corps has refused to offer any commitment to the Jasper Ocean Terminal—including implementing the easement release pursuant to Congressional directive—until after an environmental impact statement and permit are secured for the Jasper Ocean Terminal. However, both an environmental impact statement and issuance of a permit are federal actions undertaken by the Corps of Engineers. Thus, it appears circular that the Corps of Engineers will not work towards making the Jasper Ocean Terminal a reality until after the Corps of Engineers takes those actions necessary to make it a reality, despite Congressional direction and a bi-state agreement.

As noted, the Savannah Corps is schizophrenic when it comes to the Jasper Ocean Terminal. On the one hand, despite Congressional direction, the Savannah Corps has stated that "[w]hen viewed holistically, there is still considerable uncertainty about development of a container terminal in Jasper County" and that "[d]evelopment of container terminal in Jasper County would be challenging." Savannah Corps, Final EIS Appx. A at 512. Nonetheless, on the other hand, the Savannah Corps has claimed that "[i]f SHEP is constructed, it would benefit the development of a container terminal in Jasper County by significantly reducing its initial construction costs." Savannah Corps, Final EIS Appx. A at 457. This claim is based on the idea that dredge material disposed of at Sites 14A/B would provide suitable material for the fill foundation.

But the planning of the deposition of that material over a 50-year period raises genuine concern over the whether the Savannah Corps is effectively eliminating a Jasper Ocean Terminal. Ltr. of Battey to Moss, dated Dec. 17, 2010 ("[I]f the disposal cells on which the Jasper Ocean Terminal is presently sited are used, as is currently in the [SHEP], this would preclude the construction of the terminal."). The JPO consultant has prepared an "Easement Release Plan." One member of the JPO has characterized the February 2012 Easement Release Plan as an "agreement by the [Savannah Corps] to modify the dredge material placement plan related to the [SHEP]." Ltr. of Bethea to Jasper County Port Interested Parties, dated April 18, 2012. However, the dredge management plan proffered by the Savannah Corps (and updated in March 2012) and the Final EIS make no mention of the Easement Release Plan,[40] raising questions about the Savannah Corps' commitment to the Easement Release Plan and the Jasper Ocean Terminal.

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[40] There is some question about the wisdom of the Easement Release Plan generally. It contemplates the monetary contribution of the JPO (and by extension, GPA and the South Carolina State Ports Authority) towards an action that the Savannah Corps may already be committed to undertaking as part of the SHEP. The Savannah Corps has already determined that the dikes must be raised to accommodate dredge material at Sites 14A/B. Additionally, the deposition of material in Sites 14A/B from the SHEP is within the jurisdictional province of the Commission rather than

An additional concern is the deposition of the cadmium-laden dredge material in Sites 14A/B in light of a future Jasper Ocean Terminal. As previously discussed, the elevated levels of cadmium create a concern for birds as well as the future effluent stream that may be contaminated with elevated levels of cadmium. The Savannah Corps has proposed a plan to cap the cadmium-laden material in Sites 14A/B, but appears to have made no accommodation or given any consideration to the effect of construction of a marine terminal on top of this cadmium material and the potential for soil compression and those impacts on the environment (such as the possibility of increased effluent with higher concentration of cadmium). Unless these issues are analyzed and studied, the Savannah Corps' dredge material disposal plan could significantly impair the Jasper Ocean Terminal by creating remediation costs that exceed the cost of alternative disposal sites or may even preclude terminal development altogether.

Further, as discussed in this decision and as reflected in the Final EIS and Final GRR, the SHEP is not designed—even at -47 feet MLW—to accommodate most of the Post-Panamax Generation 2 vessels. The SHEP is designed for 8,200 TEU vessels. However, a state-of-the-art Jasper Ocean Terminal would require a deeper channel—a minimum of -50 feet MLW—to operate efficiently and productively and would need to accommodate vessels larger than 8,200 TEUs. E-mail of Cameron to Moss, dated April 22, 2011 (noting that the GPA acknowledged that another deepening would be required to make the Jasper Ocean Terminal a viable project). The GPA has stated that the Jasper Ocean Terminal is necessary. The GPA Executive Director told the DHEC Board on November 10 that economic studies show "we need all the port capacity that a future

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the JPO. Nonetheless, the Commission will maintain a dialogue with the South Carolina representatives on the JPO to work towards a plan that is consistent with this decision and moving the Jasper Ocean Terminal forward.

project at Jasper County can bring." Transc. DHEC Bd. Mtg. at 28:10-12 (Nov. 10, 2011).[41] Therefore, a second deepening of the Outer Harbor and a portion of the Inner Harbor will be necessary for a Jasper Ocean Terminal, and the Savannah Corps would have the opportunity to expand that project if deemed necessary in light of the information received through the SHEP.

The Savannah Corps' disregard for the future Jasper Ocean Terminal is troubling and contrary to the best interests of the United States as well as the States of South Carolina and Georgia. The Savannah Corps' position also raises serious questions under the United States Constitution. By failing to account for the Jasper Ocean Terminal, a project endorsed by Congress and two states, the Savannah Corps is taking an action that favors the State of Georgia and its ports—the beneficiaries of the SHEP—over the State of South Carolina, which is denied an opportunity to realize a gain from the Jasper Ocean Terminal.[42] If the SHEP is designed and implemented in such a way to significantly impair the Jasper Ocean Terminal, then the Savannah Corps may well be violating the Port Preference Clause of the United States Constitution. U.S. Const. Art. I, § 9, cl. 6 ("No preference shall be given by any regulation of Commerce or Revenue to the Ports of one State over those of another."). Implementation of the Commission's decision

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[41] The GPA's commitment to a Jasper Ocean Terminal is questionable. While the IGA specifically states that the GPA "acknowledges, agrees and represents" that "there is an established need and purpose for the Jasper Ocean Terminal" and that the project's "feasibility is presumed," it then informed the Commission that it neither "admits nor denies" that the Jasper Ocean Terminal is a viable and feasible project. IGA, First Am. at 3.c (June 29, 2009); Savannah Riverkeeper v. DHEC, Docket No. 11-ALJ-07-0618-CC, GPA Resp. to Requests for Admissions, dated April 3, 2012 (stating it neither admits nor denies the viability and feasibility of the Jasper Ocean Terminal).

[42] As one South Carolina resident commented on the SHEP's effect of precluding the development of the Jasper Ocean Terminal, "I feel many SC citizens have been hoodwinked at the final hour.... The port of Savannah has fought aggressively in the past to stop any construction of a new Jasper county port that would compete against their ability to attract all South Georgia ocean shipping customers." E-mail from S.C. Independent Truck Driver for Savannah Port to Bailey, dated Jan. 26, 2011.

keeps the Savannah Corps in line with the U.S. Constitution, whereas the Savannah Corps' proposal raises serious Constitutional questions.

(6) Economics

The Savannah Corps generally ignored the economic impacts of the SHEP on South Carolina. DHEC, Staff Assessment at 7 (Sept. 30, 2010) ("The final issue is that the draft EIS and GRR completely ignore the benefits that will accrue to South Carolina from a properly designed project."). However, the Commission is tasked with evaluating the economic effects of the SHEP on South Carolina. See S.C. Code Ann. Regs. 19-450.9.A.1, .5. While the Draft EIS and Draft GRR provide no analysis of the economic impact of the SHEP on South Carolina, the Final EIS and Final GRR at least include some statistics on South Carolina counties impacted by the SHEP. Savannah Corps, Final GRR Appx. A at 166-72. And while the Savannah Corps performed a generic regional economic analysis for the -47 foot MLW alternative, it conducted no regional economic development analysis at any other alternative depth. Savannah Corps, Final GRR at 214 tbl. 11-3.

Despite the dearth of analysis by the Savannah Corps, the Commission recognizes that there will be some minimal degree of positive impact on South Carolina through the SHEP. "No increase in cargo is expected to occur as a result of the proposed harbor-deepening. As a result, the number of containers that transit the areas that surround the port would not change as a result of a deeper harbor...." Savannah Corps, Final GRR at 259. Thus, because throughput capacity is the same for the GPA regardless of whether the SHEP is constructed, the only benefits to South Carolina accrue from temporary construction jobs and indirect benefits from the construction of the SHEP. See Savannah Corps, Final GRR at 214 tbl. 11-3 (noting some positive effect to the gross regional product, income, and employment at the -47 foot MLW alternative level). In short, although there will be economic benefits to South Carolina, those benefits are small, temporary, and not long-lasting.

Based on the Savannah Corps' own economic analysis in the Draft EIS, a depth of -45 feet MLW provides a benefit-to-cost ratio of 4.6:1, while the -47 feet MLW depth provides a marginally lower benefit-to-cost ratio (4.5:1).[43] See Savannah Corps, Draft GRR at 185 tbl. 11-1. However, the Savannah Corps revised its analysis, in part reallocating increased tonnage forecasts for imports and exports, resulting in an increase in economic benefits. Savannah Corps, Final GRR at 74 tbl. 5-10. After these revisions and reallocation, the benefit-to-cost ratio (unadjusted for the project life and discount rate) for the -47 foot MLW depth is 4.5:1 (or 4.45:1), while the benefit-to-cost ratio (unadjusted for the project life and discount rate) for the -45 foot MLW depth slightly declined to 4.3:1. Savannah Corps, Final GRR at 203 tbl. 11-1. In other words, both the -45 and the -47 foot MLW alternatives offer similar economic benefits.[44]

Importantly, the Commission's decision limiting the controlling depth of the Inner Harbor to -45 feet MLW accords with the Congressional appropriation and authorization for the SHEP. The Fiscal Year 2012 Project First Cost is $652 million (with an anticipated total project investment cost of $709 million).[45] Savannah Corps, Final GRR at 261 tbl. 14-1. SHEP's authorization in 1999 was for a total project cost of $230,174,000, with cost escalation allowances through October 2011 elevating the authorized project cost to $469 million. See Pub. L. 106-53, 113 Stat. 269, § 101(b)(9) (1999); U.S. Army Corps of Eng'rs, Planning Guidance Notebook, ER 1105-2-100 (April 2000).

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[43] These calculations are based on the Savannah Corps' proposed mitigation, as opposed to the actual mitigation required to ameliorate the adverse environmental impacts. Taking into account the necessary mitigation to offset the actual adverse environmental impacts, the benefit-to-cost ratio of the -45 feet MLW is likely to be significantly better than other depths, as deeper alternative depths would require significantly more mitigation due to the significantly increased adverse environmental impacts.

[44] For "acceptability," the -45 foot MLW alternative "provides moderate satisfaction to the local maritime community." Savannah Corps, Final GRR at 223 tbl. 11-3. Thus, the -45 foot MLW alternative is deemed acceptable and feasible.

[45] To date, the Savannah Corps has received federal appropriations and construction funding of approximately $9.3 million. Savannah Corps, Final GRR at 274 tbl. 15-1.

There is a 20% overrun allowance, which, based on the $469 million figure would allow the Savannah Corps to proceed with the SHEP without additional Congressional authorization if the project first cost did not exceed $562,800,000. 33 U.S.C.A. § 2280; see Savannah Corps, Final GRR at 275 ("Project First Cost exceeds authorized amount by more than 20%, meaning the SHEP, as proposed by the Savannah Corps, requires a statutory modification and further authorization by Congress."). According to the Savannah Corps, the incremental, additional cost for dredging from -45 feet MLW to -47 feet MLW is approximately $142 million.[46] Savannah Corps, Final GRR at 286-88 tbl. 15-6. Therefore, an approved controlling depth of -45 feet MLW, even with the additional mitigation costs required by the Commission to compensate for the environmental impacts, will bring the SHEP below the $562,800,000 threshold and allow the SHEP to proceed without additional Congressional authorization.[47]

(7) Navigability and Depth

Avoiding and minimizing the significant adverse environmental impacts of the SHEP with a revised mitigation plan justify a controlling depth of -45 feet MLW to move the project forward while maintaining the Savannah Corps' compliance with environmental laws. The -45 foot MLW controlling depth would apply for the portion of the entrance channel to the Kings Island turning basin (Stations -14+000 to 103+000) (which includes the Inner Harbor), and a -47 foot MLW depth is a complementary depth in the Outer Harbor and entrance channel (Stations -14+000 to -96+880)

[46] This figure is calculated from the incremental cost of navigation ($97 million), fish and wildlife mitigation ($13 million), and "other" costs ($32 million).

[47] Additionally, in an effort to cooperate and allow the SHEP to move forward as quickly as possible, the Commission will consider a request from the Savannah Corps to classify a mitigation component or other term or condition as the obligation and responsibility of a non-federal sponsor for the SHEP that may exclude such obligation from the cost-sharing calculation.

proposed and examined by the Savannah Corps for a -45 foot MLW Inner Harbor depth.[48] Additionally, a -45 foot MLW is exclusive of dredging contract variability (which may add an additional two feet of depth) and advance maintenance (of up to six feet). See Savannah Corps, Final EIS at 3-9, -22. The Savannah Corps states that a -45 foot MLW in the Inner Harbor would provide an operating depth of 49 feet for 50% of the time, and 51 feet for approximately 30% of the time. Savannah Corps, Final GRR Appx. A at 23, fig. 17, Final GRR Appx. C 1.1.16 (Vertical Ship Motion Study for Savannah, GA Entrance Channel at 86 (May 2010)). This provides a more than adequate window for the GPA to accommodate its vessel traffic.

Given the Savannah Corps' resistance to South Carolina's efforts to protect its environment and the Savannah Corps' assertion that it is exempt from these efforts, it is necessary to examine whether the condition of a -45 feet MLW controlling depth interferes with utilization of the federal navigation channel in Savannah. 33 U.S.C.A. § 1344(t)[49]; see Delaware v. U.S. Army Corps of

[48] Also, the Savannah Corps has applied a two-foot differential between the Inner Harbor and Outer Harbor and entrance channel depth. The Commission would consider a deeper Outer Harbor, as the most severe environmental impacts are associated with the Inner Harbor depth. However, the Savannah Corps failed to analyze any scenario or alternative in which a -45 foot MLW controlling depth for the Inner Harbor was constructed in conjunction with a 3 or 4 foot deeper Outer Harbor, instead applying a two-foot differential to all alternatives. Thus, the Commission approval is based on the alternatives presented and analyzed by the Savannah Corps.

[49] Section 1344(t) states:

> Nothing in this section shall preclude or deny the right of any State or interstate agency to control the discharge of dredged or fill material in any portion of the navigable waters within the jurisdiction of such State, including any activity of any Federal agency, and each such agency shall comply with such State or interstate requirements both substantive and procedural to control the discharge of dredged or fill material to the same extent that any person is subject to such requirements. This section shall not be construed as affecting or impairing the authority of the Secretary to maintain navigation.

Eng'rs, Case No. 1:09-cv-00821-SLR (Nov. 17, 2010).[50] Based on the model vessel, fleet distribution, economics, and analysis by the Savannah Corps and the Commission, the Commission finds that it does not.

The term "maintain navigation" is not precisely defined. For example, maintaining navigability could be synonymous with maintenance dredging for the harbor, which results in "maintaining" the existing depth. In fact, under South Carolina law, the term "maintenance dredging" is specifically defined to mean "excavation to restore the depth of underwater lands or restore channels, basins, canals, or similar waterway accesses to depths and dimensions that support and maintain prior or existing levels of use that previously have been dredged pursuant to a license issued by the department...." S.C. Code Ann. § 48-39-10(X). Under this approach, the Corps of Engineers may only ignore a State's efforts to protect its environment to the extent that the Corps of Engineers seeks to maintain an existing and already constructed project and depth. This is a reasonable construction of the language, as it would prevent a State from thwarting maintenance of a project that had already been constructed and already been determined to be a benefit to the nation while at the same time giving appropriate effect to the general requirement that the Corps of Engineers must follow state laws with respect to water pollution control.

The Savannah Corps takes a much broader view of this term, however, claiming that this "exemption" from a State's environmental compliance requirements applies to unconstructed projects that it desires to build. The Commission believes that this view destroys the rationale of protecting an existing investment as implied by the word "maintain." Regardless, the Commission believes it is unnecessary to resolve these competing definitions for purposes of its own review.

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[50] Notably, the authorized depth in the Delaware case found to be consistent with "maintaining navigability" was a controlling depth of -45 feet MLW. Delaware v. U.S. Army Corps of Eng'rs, Case No. 1:09-cv-00821-SLR, Order (Nov. 17, 2010).

Rather, the Commission will review its determination of the environmental protections—and specifically its determination that the -45 foot MLW in the Inner Harbor is the appropriate depth to protect South Carolina's resources—to determine whether there is any undue or unreasonable interference with the SHEP's purpose even under the Savannah Corps' expanded definition of "maintain navigation." However, this analytical framework first requires a discussion of what the SHEP is proposed to accomplish.

The SHEP's stated purpose is to provide increased transportation efficiencies and accommodation for some Post-Panamax ships expected to transit the Panama Canal after its expansion. See Savannah Corps, Final EIS at 2-1, -2. These ships can be larger than 12,000 TEUs in capacity. See U.S. Army Corps of Eng'rs, The Implications of Panama Canal Expansion to U.S. Ports and Coastal Navigation Economic Analysis at 6-7 (Dec. 2008). However, the SHEP is not designed to accommodate ships with the largest expected Post-Panamax capacity.[51] The 1998 Tier I environmental impact statement states that the SHEP "would allow the port to accommodate the ships of the future, *i.e.*, larger and newer vessels with a capacity greater than 6,000 TEUs...." Savannah Corps, Tier I EIS at 12 (1998). But in the Final EIS, the Savannah Corps proposes to design a channel to accommodate a vessel with a capacity of approximately 8,160 TEU, using the Susan Maersk as its model ship for simulation purposes.[52] The requisite environmental impact

[51] Also, the Panama Canal expansion will allow vessels up to approximately 1,400 feet long and 160 feet wide. As discussed, the SHEP does not propose to accommodate those ships, and even as designed and proposed by the Savannah Corps, the SHEP would be physically unable to accommodate those larger Post-Panamax ships.

[52] The Savannah Corps describes the Susan Maersk alternately as an 8,200 TEU and an 8,680 TEU vessel. See Savannah Corps, Final GRR at 33 (8,200 TEU), Final GRR Appx. C 1.1.16 (Vertical Ship Motion Study for Savannah, GA Entrance Channel at 2 (May 2010)) (8,680 TEU). Maersk lists the vessel as having a capacity of 8,160 TEUs. See http://www.maerskline.com/link/?page=brochure&path=/our_services/vessels. The Maersk number represents "filled" capacity based on a realistic number of containers with cargo, as opposed to a pure capacity of 8,680 TEUs, which could only be reached with empty containers.

statements reflect that, even at the Congressionally authorized maximum controlling depth of -48 feet MLW (in the Inner Harbor),[53] the SHEP is not designed to accommodate the largest Post-Panamax ships in either width or depth.[54]

Thus, it is necessary to evaluate the viability of a -45 foot MLW depth for the SHEP in view of the expected capacity. In performing this evaluation, the Commission looked to available data on transits in an existing South Atlantic port with a current controlling depth of -45 feet MLW. Comparing the size class of the Savannah Corps' model ship to a -45 foot MLW depth reflects that the SHEP will allow GPA to accommodate its target vessel class.

Vessel Size (in TEUs)	Average Draft (in feet)
8034	41.2
8238	42.4
8401	41.5
8411	41.9

Data provided by TradeWorthy, Inc., April 9, 2012. These numbers represent 152 voyages in 2011, with a weighted average draft of 41.6 feet over all 8,000-8,500 TEU vessel classes, which includes vessels larger than what the Savannah Corps modeled for the SHEP.[55] Id. Further, the average

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[53] Note that Congress authorized the SHEP for any depth between -42 and -48 feet MLW, so the controlling depth limitation of -45 feet MLW fully accords with Congressional authorization.

[54] As the Savannah Corps further explains:

> The largest capacity vessels calling on the US East Coast [including Garden City Terminal] are expected to be about 8,000 TEUs. Vessels much larger than 8,000 TEUs are more apt to be deployed on Asia to Europe and/or Transpacific trade routes. The Economic Appendix [page 51] explains why these larger vessels are unlikely to call at Savannah, irrespective of SHEP.

Savannah Corps, Final EIS Appx. A at 510. The Savannah Corps further states it will be a "rare occasion" when a vessel wider than the 140 foot beam Susan Maersk calls on Savannah ports. Savannah Corps, Final EIS Appx. A at 830.

[55] The model ship, the Susan Maersk, has a nominal TEU capacity of 8,160 and is a member of Maersk's "Sovereign Maersk" class. The next two larger classes of Maersk vessels are the "Axel Maersk" and "Maersk Stepnica" classes at nominal TEU capacities of 8,272 and 8,379, respectively. Thus, the table includes a vessel class less than the modeled ship as well as accommodates two larger

draft of all container vessels from 2005 to 2011 at this 45-foot deep port never exceeded an annual average of 35.1 feet.[56] Id. Thus, the Savannah Corps, through its modeling assumptions and choices, has effectively acknowledged that a controlling depth of -45 feet MLW is sufficient to accommodate Post-Panamax ships expected to call in Savannah. Indeed, Jacksonville is deepening to a controlling depth of -45 feet, and Bayport currently has a controlling depth of -45 feet, further demonstrating that 45 feet is an adequate depth for navigation purposes. Savannah Corps, Final GRR at 61 tbl. 5-2.

Additionally, the Assistant Secretary of the Army (Civil Works) testified before the U.S. House of Representatives' Committee on Transportation and Infrastructure, Subcommittee on Water Resources and Environment on October 26, 2011, regarding to the economic importance of seaports. In her testimony, Assistant Secretary Darcy stated:

> Many of the world's shipping companies are constructing larger, more efficient container vessels that require channel depths of 50 to 55 feet.... **The U.S. also has several other ports with depths of 45 feet on the Atlantic, Pacific and Gulf coasts, which will be able to accommodate such vessels when they are less than fully loaded**.

Test. of Ass't Sec'y Darcy, House Comm. On Transp., Subcomm. On Water Resources and Env't (Oct. 26, 2011) (emphasis added). Thus, the Corps of Engineers has acknowledged that a "depth of 45 feet" is sufficient. In this context, it also must be noted that the Savannah ports are "interim" ports of call, rather than first or last stops during a vessel transit. Savannah Corps, Final GRR Appx. A at 16, figs. 10, 11 (78% of vessels calling on Savannah arrive from another U.S. port and 56% leave Savannah destined for another U.S. port). Thus, as the Savannah Corps notes, vessels entering

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vessel classes. Further, the existing and "ordered" vessels from 5,100-8,999 TEU capacity equal 75% of the vessel fleet. Savannah Corps, Final GRR at 40 tbl. 4-5.

[56] Specifically, the average drafts in feet for all Post-Panamax ships from 2005 through 2011 were as follows: 2005, 33.2; 2006, 33.3; 2007, 33.5; 2008, 33.6; 2009, 33.1; 2010, 35; 2011, 35.1.

the Savannah ports are "less than fully loaded." Savannah Corps, Final EIS at 2-2, 3-2 (noting ships do not call on Savannah fully loaded), Final GRR Appx. at 16 ("Calls at Savannah are expected to generally continue to be the 'second in' or 'third in' call in US port rotations in the future...."). In other words, the SHEP does not need to accommodate the design ship at its maximum draft at maximum practicable capacity.[57]

In making its determination that -45 foot MLW is sufficient, the Commission relies in part upon the U.S. Army Corps of Engineers "Hydraulic Design of Deep-Draft Navigation Projects" engineering and design manual. See U.S. Army Corps of Eng'rs, Hydraulic Design of Deep-Draft Navigation Projects, EM 1110-2-1613 (May 31, 2006). Chapter 8 of that manual discusses the generally accepted design practice for width. For a variable cross-section, trench, one-way traffic channel,[58] which is the category for the SHEP, the recommended width for the model ship is 497 feet. Id. at 8-6 (May 31, 2006) (multiplier of 3.5 for trench channel times the Susan Maersk beam equals 497 feet of necessary width). The SHEP proposes a width of approximately 470 feet (at -47 feet MLW). Savannah Corps, Final EIS at 3-4, -5, Final GRR at 140 fig. 8-1. However, a shallower

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[57] In fact, in the 1994 deepening project for the Savannah, the maximum draft of the design vessel exceeded the selected alternative depth of -42 feet MLW. Savannah Corps, Final EIS at 3-1.

"Maximum Practicable Capacity," which is the measurement utilized by the Savannah Corps in its analysis, is defined as the "highest reasonable practicable capacity based on weight and volume that a given vessel can hold assuming a fixed average import and export cargo weight" with other factors, and the Savannah Corps' calculations include vessel calls wherein the vessel exceeds its maximum practicable capacity. Savannah Corps, Final GRR Appx. A at xii. Therefore, the Savannah Corps' analysis overestimates the cargo and cargo efficiencies, lending support to the concept that a controlling depth less than -47 feet MLW will adequately serve the project purpose and need and that the economic benefit at -47 feet MLW is likely overestimated in comparison to the shallower alternatives.

[58] "The channel is not designed for full two-way traffic." Savannah Corps, Final EIS Appx. A at 830.

depth of -45 feet MLW actually increases the width of the channel.[59] At a controlling depth of -45 feet MLW, the channel width would be about 482 feet, which better conforms to guidance and provides an additional safety factor needed to maneuver ships in the channel.[60]

Nor is there any more than a *de minimis* change in the economic benefits of the SHEP due to the revised depth for environmental protection measures. Further, the impact on vessel calls is *de minimis*. The Final GRR predicts the vessel calls in 2030 at the following levels: -42 feet, 4,092 calls; -45 feet, 3,647 calls; and -47 feet, 3,601 calls. Savannah Corps, Final GRR at 88. Thus, the difference in vessel calls from the existing -42 feet MLW to the -45 feet MLW is 12%, while the difference between the -45 foot MLW depth to the -47 foot MLW depth is a mere 46 vessels in 2030—a negligible 1.3%. Savannah Corps, Final GRR Appx. A at 74 tbl. 43, 80 tbl. 48. The transportation efficiencies on a cost per mile basis for goods traveling from the Far East through the Panama Canal to the East Coast of the United States (FE Panama ECUS), which is a primary benefit of the Panama Canal expansion, are nil.

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[59] Width is measured at the bottom of the channel. Applying the necessary slope to the same starting width at the surface, as depth increases the width, measured at the bottom, narrows. Thus, all depths will narrow the existing channel to some degree. Savannah Corps, Final EIS at 3-4, -5; Savannah Corps, Final GRR at 140 fig. 8-1. With a 1:3 side slope, a decrease in one foot of depth equals an increase of 6 feet in width.

[60] Traffic in the channel is also constrained by the liquefied natural gas (LNG) vessels, which require a one-mile halo that must be clear of all other vessel traffic. Savannah Corps, Final GRR at 42, 48. Increased LNG vessel traffic will therefore further impede the level of container vessel traffic modeled and relied upon by the Savannah Corps.

Unit Cost on the FE Panama ECUS Route per Thousand Miles

	45 foot Channel Depth	46 foot Channel Depth	47 foot Channel Depth
Panamax	$2.46	$2.46	$2.46
Post-Panamax (Generation I)	$1.92	$1.92	$1.92
Post-Panamax (Generation II)	$1.82	$1.82	$1.82

Savannah Corps, Final GRR Appx. A at 67 fig. 32.[61] Thus, even the Savannah Corps has recognized that no transportation efficiencies—the stated justification for the SHEP—are gained on the primary trade route through the Panama Canal below a depth of -45 feet MLW.

The Commission recognizes that the Savannah Corps identified a slight economic benefit as the depth increases beyond 45 feet on other routes. However, the Savannah Corps also concluded that the bulk of the transportation savings are found on the Panama route, "compris[ing] nearly half of the project benefits," for which "the savings ... do not increase beyond a 45-foot project." Savannah Corps, Final GRR Appx. A at 87 and 70. The difference between the maximum practicable capacity in metric tons on **all** routes between a -45 foot MLW controlling depth and a -47 foot MLW controlling depth is slight. For Post-Panamax Generation I (PPX1), the difference is only 0.65%. Savannah Corps, Final GRR Appx. A at 77 tbl. 45. The three routes transiting the Panama Canal—the publicly stated reason for needing to deepen—are those designated as FE (Panama) ECUS, FE ECUS EU PEN, FE ECUS MED PEN.[62] Savannah Corps, Final GRR at 131. On these Panama routes, the metric tonnage difference between a controlling depth of -45 feet MLW and a depth of -47 feet MLW is negligible.

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[61] In fact, there is no vessel unit cost savings on *any* route justifying a ship type change below a controlling depth of -46 feet MLW. Savannah Corps, Final GRR at 85.

[62] These represent the Far East (FE) routes calling on the East Coast of the United States (ECUS) through the Panama Canal and the European Union (EU) or Mediterranean (MED) on a pendulum (PEN) route.

PPX1 – Maximum Practicable Capacity (metric tons)

	-45 feet MLW	-47 feet MLW
FE Panama ECUS	42,820	42,820
FE ECUS MED PEN	47,120	47,284
FE ECUS EU PEN	44,673	44,673
Total Difference		+164 (0.001%)

Savannah Corps, Final GRR Appx. A at 77 tbl. 45.

PPX2 – Maximum Practicable Capacity (metric tons)

	-45 feet MLW	-47 feet MLW
FE Panama ECUS	60,014	60,014
FE ECUS MED PEN	62,172	66,271
FE ECUS EU PEN	61,473	62,611
Total Difference		+5,237 (0.028%)

Savannah Corps, Final GRR Appx. A at 78 tbl. 46.

Further, there is no difference in the Savannah ports' total share of the world fleet between a -45 and -47 feet MLW controlling depth (at 9%).[63] Savannah Corps, Final GRR Appx. A at 82 tbl. 50.

As a result, a -45 foot MLW controlling depth satisfies the obligation of the Savannah Corps to maintain navigation in the channel.

Terms and Conditions

The Commission must balance economic development with the protection of the environment to ensure the responsible implementation of the SHEP. Further, the Commission is committed to working with the Savannah Corps to ensure that the SHEP moves forward in accordance with this decision and also to provide flexibility in implementing the mitigation components required herein.

Based on the discussion and analysis undertaken by the Commission, the Commission imposes the following terms and conditions[64] to protect the environment and natural resources of

[63] Interestingly, Savannah's proposed share of the market increased from 5% in the Draft GRR released in November 2010 to 9% in the Final GRR released in January 2012. Nonetheless, Savannah's share of PPX1 and PPX2 at 45 feet and 47 feet remains unchanged (at 15% and 24%, respectively).

the State of South Carolina and provide reasonable assurance that the SHEP will not cause a violation of water quality standards or other environmental standards:

a) The authorization for activities or structures granted herein shall constitute a revocable license to use the lands and waters within the jurisdiction of the State. This authorization is issued for a period of twenty (20) years. This authorization may be renewed provided that there have been no material adverse change in circumstances.

b) All activities taken pursuant to this authorization shall be consistent with and limited by the terms and conditions of this authorization; any unauthorized work or activity different from or inconsistent with these terms and conditions may result in the modification, suspension, or revocation of this authorization in whole or in part, and the institution of such legal proceeding as the Commission may consider appropriate in the Court of Common Pleas in Jasper County, South Carolina or the Beaufort Division, United States District Court for the District of South Carolina.

c) This authorization shall not convey nor be interpreted as conveying expressly or implicitly, any property interest in the land or water in which the permitted activity is located. This authorization shall not be construed or interpreted as alienating public property for private use, nor does it authorize the Savannah Corps to alienate, diminish, infringe upon, or otherwise restrict the property rights of other persons or the public.

d) The grant, denial, modification, suspension, or revocation of this authorization shall not be the basis for any claim for damages against the State of South Carolina. In no way shall the State be liable for any damage as a result of the authorized works.

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[64] These terms and conditions are in addition to (and not in lieu of) the terms and conditions of other agencies and the requirements (such as monitoring and reporting) found in the Savannah Corps' Final EIS.

e) The authorized activities shall not block or obstruct navigation or the flow of any waters unless specifically authorized herein, and no activity should prevent the full and free use by the public of all navigable waters at or adjacent to the authorized work.

f) All spoil, dredged material, or other fill material must be tested on a regular basis to ensure the quality of the material disposed of consistent with the Inland Testing Manual, as amended or revised. U.S. Envtl. Protection Agency and U.S. Army Corps of Eng'rs, Evaluation of Dredged Material Proposed For Discharge in Waters of the U.S. – Testing Manual, EPA-823-B-98-004 (Feb. 1998). Copies of such reports shall be provided to the Commission.

g) No spoil, dredged material, or any other fill material may be placed below the mean high water or ordinary high water elevation, unless specifically authorized herein.

h) No spoil, dredged material, or any other fill material with an average level of cadmium above 9.6 mg/kg shall be deposited within the confined disposal facilities known as Sites 14A/B until a disposal plan for such material in accordance with this decision has been approved by the Commission.

i) Any hopper dredging for the Outer Harbor must take place between December 1 and March 31.

j) All dredging in the Inner Harbor is prohibited from March 16 until May 31.

k) The Savannah Corps shall make every reasonable effort to perform the authorized work in a manner to minimize adverse impact on fish, wildlife, or water quality and shall maintain any authorized structure in good condition in accordance with approved plans and specifications.

l) The Savannah Corps shall allow the Commission or its authorized agents or representatives to make periodic inspections on reasonable notice as deemed necessary by the Commission

to assure that the activity being performed is in accordance with the terms and conditions herein, including but not limited to observers on dredging vessels.

m) The Savannah Corps may deepen the existing project by three feet, plus two feet of allowable overdepth and any authorized advance maintenance depths up to six feet. This approval allows dredging the Inner Harbor to -45 feet MLW (3 feet deeper) from the mouth of the harbor (Station 0+000) to the end of the project (Station 102+500). These Inner Harbor dredging improvements include deepening and expanding the Kings Island Turning Basin and deepening of the eight container vessel berths at Garden City Terminal (Berths 2, 3, 4, 5, 6, 7, 8, and 9). Inner Harbor channel deepening also allows the construction of two meeting areas and two bend wideners. Improvements in the Outer Harbor include deepening the existing channel to -47 MLW from Stations -14+000 to -96+880 and construction of a bend widener, with the depth from Station -14+000 to Station 000+000 at -45 feet MLW.

n) The Savannah Corps must provide a comprehensive annual report on the anniversary date of this decision to the Commission for the term of this authorization advising of the past mitigation efforts, results of such efforts, proposed future mitigation actions, and any revisions, alterations, or adjustments to the mitigation plan including the terms and conditions of this decision. 33 U.S.C.A. § 2283(d)(4) (requiring the Savannah Corps to consult with the State, which as a permitting authority includes the Commission, annually regarding the status of mitigation).

o) The applicant must mitigate for 100% of the impacts of the project to dissolved oxygen unless otherwise authorized by the Commission in writing.

p) Prior to commencement of dredging or construction of the project, the applicant must submit a performance report and revised modeling report to the Commission after the

operation of the proposed eight Speece cone oxygen injection system for a period from April 1 until September 30 demonstrating full mitigation for the impacts or proposing additional mitigation techniques or methods to fully mitigate for the impact. The Commission must approve the reports and full mitigation demonstration or proposal prior to the commencement of dredging or construction of the project.

q) Prior to the commencement of dredging or construction of the project, the applicant must provide financial assurance in a form satisfactory to the Commission, including but not limited to escrow, surety bond, or letter of credit, in the amount of $19,893,920.35, to be held as a contingent fund drawn upon for operation and maintenance of the oxygen injection system if the applicant fails to secure adequate annual funding.

r) If, during the term of this authorization, the oxygen injection system or other mitigation elements fails to adequately mitigate for the dissolved oxygen impact, the Commission may issue a cease and desist for maintenance dredging to allow recovery of the channel depth or otherwise order remedial measures to alleviate the adverse dissolved oxygen impact.

s) Prior to the commencement of dredging or construction of the project, the applicant must utilize one of the following measures or a combination thereof to satisfy the wetlands mitigation credit deficit of 3,777:

    1) Submit a mitigation plan to the Commission for approval to address each element and approve each property or activity identified by the Savannah Corps to satisfy each wetlands mitigation component within the Lower Savannah watershed; or

    2) Withdraw credits from an approved wetlands mitigation bank in South Carolina within the Lower Savannah watershed and provide credit withdrawal documentation from the mitigation bank to the Commission; or

3) Provide a payment of $9,500,000 to the South Carolina Conservation Bank, with the stipulation that the Conservation Bank must use such funds for the requisite preservation of wetlands and/or upland buffers that directly benefit adjacent wetlands in the Lower Savannah watershed, and a payment of $9,675,000 to the South Carolina Department of Natural Resources, with the stipulation that DNR must use such funds for the requisite creation, restoration, or enhancement of wetlands in the Lower Savannah watershed.

t) This authorization may not be assigned in whole or in part without the prior written permission of the Commission and the written agreement of the transferee to abide by all the terms and conditions herein.

u) The applicant's responsibility to complete the required compensatory mitigation as set forth in this decision will not be considered fulfilled until the applicant has demonstrated compensatory mitigation project success and has received written verification of that success from the Commission.

v) These terms and conditions may be modified, amended, or revised by further action of the Commission in its sole discretion after review of a request for such action and the evaluation of appropriate supporting documentation provided by the applicant or *sua sponte* on the Commission's own initiative based on a change of circumstances or conditions.

w) If any term, condition, or provision of this decision is for any reason held to be invalid, such holding shall not affect the validity of the remaining portions of the decision.

x) The Savannah Corps may petition the Commission in writing for a determination as to whether a particular mitigation component or other term or condition may be considered an obligation and responsibility of a non-federal project sponsor under terms and conditions

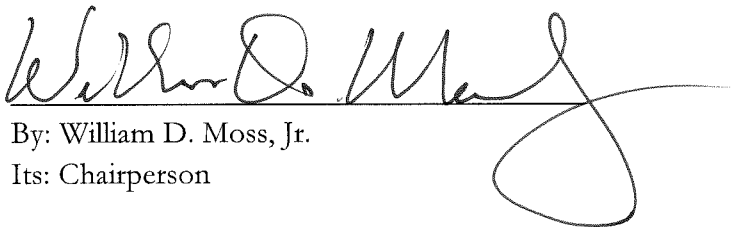
acceptable to the Commission, including, but not limited to, a binding, enforceable contract from such non-federal project sponsor.

y) These terms and conditions are enforceable in the Court of Common Pleas, Jasper County, State of South Carolina, or the Beaufort Division, United States District Court, District of South Carolina.

Conclusion

IT IS THEREFORE DETERMINED that the SHEP may proceed only on the terms and conditions as set forth above, and that, in accordance with applicable law, these terms and conditions are incorporated into and made an integral part of the 401 Certification issued by DHEC on or about November 15, 2011.

ISSUED ON BEHALF OF THE COMMISSION:



By: William D. Moss, Jr.
Its: Chairperson

This 8th day of May, 2012.
Columbia, South Carolina